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AUTHOR	Harrison, Gary, Ed.; Mirkes, Donna Z., Ed.
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ABSTRACT

Intended for educators who direct federally funded model projects, the booklet provides a framework for special education product development. In "Making Media Decisions," G. Richman explores procedures for selecting the most appropriate medium to carry the message of a given product. The fundamental questions are addressed: what is the goal; who is the audience; and what is the message. Five variables to consider are suggested--appropriateness, use, timeliness, production requirements, and cost. A second chapter, "Marketing Concerns--Design to Distribution" by C. Daniels, points out that marketing concerns in three areas (target audience, competition, and marketing factors) affect the planning and development of a product. Specific characteristics that can determine a product's marketability are seen to include completeness, timeliness, audience, content appropriateness, quality, effectiveness data, format, market scope, prior dissemination, and legal status. Several available distribution channels (such as the Market Linkage Project for Special Education) are described. K. Cotton, in "The Print Product--Design, Development, and Production," stresses the predevelopment importance of establishing target audience, purpose, and need. Five major formats for educational print products are discussed: awareness materials, manuals/guides, reports, student materials, and instruments and forms. "The Nonprint Product--Design, Development, and Production" (J. Mann and A. Murphy) looks at the initial decision about the needs and characteristics of the target audience, and the purpose and need for the intended product. Discussed are such nonprint media formats as slides and slide tapes, filmstrips, audiotapes, and television. A final chapter, "Some Guidance for the Evaluation of Dissemination Activities" by C. Allen and L. Kliot, addresses the evaluation of dissemination with three major sections on the nature of and stages in dissemination, the role of evaluation in dissemination, resources for evaluation, and product development and evaluation in the context of dissemination. (SB)

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Process to Product

Edited by
Gary Harrison
Donna Z. Mirkes

Prepared by:
Western States Technical
Assistance Resource (WESTAR)

EC142495

Donna Z. Mirkes, Production
Gregory M. Owen, Production/Graphics
Judith C. Christner, Cover Design

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Contents

Foreword vii
Sally Bulford

Contributors xi

Making Media Decisions 1
Gary Richman

Marketing Concerns: Design to Distribution 19
Carol Daniels

The Print Product: Design, Development, and Production 53
Kathleen Cotton

The Nonprint Product: Design, Development, and Production 87
Judith Mann
Ann Murphy

Some Guidance for the Evaluation of Dissemination Activities 131
Carter Allen
Lily A. Kliot

Foreword

When an individual or institution receives federal funds from Special Education Programs for the development of a model project, the award is usually made in recognition of the developer's expertise in a specific area related to the education of the handicapped. It is also usually made with the expectation that the results of model development will be communicated to others through responsible dissemination, that is, the dissemination of products that have demonstrated effectiveness with the target population. It is recognized that projects may develop either a specific product or a process; with that recognition, however, comes the expectation that the process developed will be supported by tangible materials --print or audio-visual products. Too often, however, the dissemination of these products never occurs--because the expertise and experience behind the product are not communicated and packaged effectively. Perhaps the

product's purpose is muddy; the objectives may not have been clearly defined. Perhaps the wrong medium was chosen to carry the product's message, or perhaps the target audience was not carefully considered. Too often a product that is the result of extensive time, energy, and money ends up gathering dust on a shelf, when it should be making an impact on the educational system.

The educators who direct federally funded model projects make up the primary target audience for this volume and are all involved in some kind of product development. Appreciating that those educators are experts in a particular educational area, but recognizing that they are probably not extensively schooled in all aspects of media development, the editors of this volume have attempted to provide information relevant to product development efforts. To produce one volume that encompasses "all you ever wanted to know about everything in all types of media development" would be an impossible task. This volume does, however, provide a framework for product development and can assist the product developer in making appropriate decisions.

Prefaced by the contention that the decision-making process is not always simple, "Making Media Decisions" by Gary Richman explores the "part science, part art" of selecting the most appropriate medium to carry the message of a given product. Richman poses and discusses three fundamental communications questions: What is the goal? Who is the audience? What is the message? With a basic plan formulated as a result of answering these questions and thereby defining needs, the developer can proceed to consider the variables that will determine exactly what is to be produced. Richman suggests five variables: appropriateness, use, timeliness, production requirements, and cost. He concludes that "what makes any media decision a good decision is successfully applying creativity to the product's design, style, and approach. . . .the best materials are those that successfully combine thoughtful planning with inspired production."

In "Marketing Concerns: Design to Distribution," Carol Daniels maintains that marketing concerns should involve even the earliest conceptual stages of product development. She analyzes three such concerns as they affect the planning and development of a product: the target audience, the competition, and the marketing factors within and external to schools, within or related to government (state and federal), and within the publishing industry. The specific characteristics that Daniels says can affect or even determine a product's marketability are: completeness, timeliness, audience, content appropriateness, quality, effectiveness data, format, market scope, prior dissemination, and legal status. She then presents several available distribution channels, including commercial publishers, and gives an overview of the Market Linkage Project for Special Education, under LINC Resources, Inc. funded to arrange for the commercial distribution of special education products.

In "The Print Product: Design, Development, and Production," Kathleen Cotton stresses the predevelopment importance of establishing target audience, purpose, and need. Cotton then goes on to discuss five major formats for educational print products: awareness materials, manuals/guides, reports, student materials, and instruments and forms. The need for disclaimers, assurances, permissions, and copyright is covered, followed by a general segment on production and another on distribution.

"The Nonprint Product: Design, Development, and Production" by Judith Mann and Ann Murphy stresses the importance of planning for product development, focusing on the basic initial decisions about the needs and characteristics of the target audience, and the purpose of and need for the intended product. Various questions are presented, the answers to which lead the developer to a specific format selection. The major nonprint media formats discussed are slides and slide tapes, filmstrips, films, audio tapes, video, videodisc, and television.

Within each section, advantages and disadvantages of each format (as well as "how-to" hints) are presented, the use of professionals or in-house personnel is recommended, and the costs are indicated.

In the final chapter, Carter Allen and Lily A. Kliot address the evaluation of dissemination, defined there as "those activities which promote the wider use of effective practices, and hence includes both the distribution of products and the provision of other services in support of dissemination." The article, entitled "Some Guidance for the Evaluation of Dissemination Activities," contends that "the best dissemination aims at the transfer of an educational practice from one setting to another" and that "evaluation and dissemination are equal partners" in this effort. The chapter is divided into three major sections: the first discusses the nature of and stages in dissemination and clarifies the role of evaluation in dissemination. The second section suggests appropriate questions and resources for evaluation. The third section focuses on product development and evaluation in the context of dissemination. The final section provides full information needed to access each evaluation resource, with brief annotations.

Throughout this volume, each chapter includes a thorough discussion of the topic, a glossary of frequently used terms appropriate to the particular topic, and a detailed list of resources, including agencies, organizations, and published material. Educational product developers compose the audience for this document--the objective is to assist them in the various decision-making and technical processes that lead to an appropriate, usable product.

Sally Bulford
Managing Editor
LINC Resources, Inc.

Contributors

Carter Allen , Dissemin/Action, 3705 South George Mason Drive, Suite C-4 South, Falls Church, VA 22041.

Sally Bulford , Market Linkage Project for Special Education, Linc Resources, Inc., 1875 Morse Road, Suite 225, Columbus, OH 43229.

Kathleen Cotton , Northwest Regional Educational Laboratory, 710 Second Avenue, Portland, OR 97204.

Carol Daniels , Market Linkage Project for Special Education, Linc Resources, Inc., 1875 Morse Road, Suite 225, Columbus, OH 43229.

Lily A. Kliot , Research and Educational Practice, National Institute for Education, 1200 19th Street, NW, Washington, DC 20208.

Judith Mann , Northwest Regional Educational Laboratory, 710 Second Avenue, Portland, OR 97204.

Ann Murphy , Northwest Regional Educational Laboratory, 710 Second Avenue, Portland, OR 97204.

Gary Richman, Richman Communications, PO Box 1002, Chapel Hill, NC 27514.

Process to Product

Making Media Decisions

Gary Richman

As you are reading this very first sentence, it may have already occurred to you that someone has made the decision that the following material--what to consider when making decisions about media--will be presented to you in print. Other media formats could have been chosen. You might, instead, be watching a film now (all that action really holds your attention), or viewing a slide-tape presentation (the colorful slides and graphics really help organize the material), or this could be a live presentation with lots of charts and graphs or overhead transparencies (personal communication can be so effective). Perhaps you're thinking to yourself, no, I'm glad I'm reading this, but wouldn't it be better... : if it had photographs, or charts, or diagrams; if it were shorter, or just a leaflet instead of a chapter in this book; or if it were printed in bright colors with larger type. Or, you might be thinking that audio-visual materials wouldn't

be such a bad idea, but wouldn't it be better if it were on video cassette to watch on the video player at the office, or maybe if it were on public television at home some evening.

After considering many alternatives, like those mentioned above, someone decided that the best choice for the presentation of this material was the print medium. What went into that decision? Certainly the audience was important; there was a special target audience in mind, and you each got a copy of this book. But physically reaching the audience isn't the only issue in communicating. There are other factors, such as objectives -- what should happen as a result of the communication; the medium -- what is the appropriate means to present the material; the format --what is the most appropriate way to package the material within the medium; the timing -- can the material be delivered to the audience in time to be useful; and the cost -- how complex will it be to produce, reproduce, or use the materials; how many people will be involved; how much is their time worth; and how much time will it take. Whenever we want to disseminate information we must make media decisions, which means considering factors such as these. The factors are relatively easy to describe, but the decision-making process is not always simple. Communicating effectively is part science, part art. Unfortunately, there is no universal template which, when placed over a communications problem, results in the single correct answer about what medium, format, and style is best suited in each situation. Like any problem, however, applying logic and creativity to making media decisions increases the chance of reaching an effective solution.

Fundamental Communications Questions

Before selecting the appropriate medium, developers must answer three questions fundamental to communications: What is the goal? Who is the audience? What is the message? These questions are basic to effective communications. Answering these questions is like taking a compass reading, in that the answers give direction. If you read the compass at the beginning of the journey, it should be easy to travel in the right direction. If you don't read the compass until well into the journey, there is a good chance that you will go off course, or even get lost. If the point of this simile seems obvious, the principle it illustrates is violated with depressing regularity. The single most common, and often most serious, pitfall to making effective media decisions is skipping these basic questions and jumping immediately to producing a product.

Does the following scenario sound familiar? In a staff meeting, everyone agrees there are some communications issues about the program to be addressed. Someone says, What we need is a good brochure. Someone else volunteers, I used to work at KWTV and I could get us some air time for public service announcements on television -- free! As interest picks up, someone suggests that she could take some slides to use on the television spot and they could be [illegible] for the brochure. That would be very economical. Before realizing it, the staff has planned a brochure and a "free" television spot. What is missing is a goal, a target audience, and a message. What can happen in this kind of situation is that the products begin to dictate what is said and to whom. For example, as the meeting continues the staff decide that because TV reaches a broad audience, the message should be kept very general -- maybe just say the project's name and what it does. The brochure might go into a little more detail. If what the project really needs, however, is to communicate to teachers, administrators, and parents the

value of mainstreaming, then the communication is off to a very bad start. No matter how professional the television spot and brochure, they will not contribute much toward meeting the project's communication needs. Nor is the TV spot really free, for the staff have consumed valuable time and energy for little or no return on their investment.

The Goal

Thinking through a communications problem should always be the first step -- and that begins with the question: What do we want to say to whom and why? The answers are necessarily interrelated, but let's begin by examining them individually. First, what is the goal of the communication? When we are thinking of curriculum materials, the concept of instructional objectives is familiar. A unit on math might be designed to teach the numerals 1-10. If the instructional objectives can be written in behavioral terms, the focus is really sharpened. Behavioral objectives such as, The student will be able to count from one to ten or The student will be able to add without error any two single-digit numbers, make the communications goal clear and concrete. The principle applies to other forms of communication. If you can answer the question, Why do we want to communicate? with a statement in the format, So that the audience will respond (behave) in a particular way, you will achieve the sharpest possible focus.

Often media materials are referred to as informational or attitudinal; with these, the objective is not for the audience to do something as much as to know, feel, or think something. For example, you might want to tell someone about your program or the importance of day care or the self-esteem a child gains from being mainstreamed. Information and attitudes are appropriate communications goals which also can often be expressed

in behavioral terms, because attitudes, knowledge, and feelings result in actions. For example, an initial communication to make support agencies aware of project services might actually have the goal of stimulating health care professionals to make appropriate referrals. With that goal clearly articulated, recorded, and visible, you can design, write, and distribute better, more effective materials. Similarly, if an attitudinal goal is stated, to eliminate teacher resistance to having children with handicaps in their classrooms, the statement helps identify who constitutes the audience and what their concerns are. Knowing the audience and the objective, you can determine the most appropriate approach and materials.

The Audience

Identifying why you want to communicate -- what the goal is -- also helps to clarify who the audience is. The more you know about the audience, the better decisions you can make about how to communicate with them, because you'll know to whom you are talking.

What can you know about the audience? Many of its characteristics can be described; for example: How big is it? Is it an individual or a group? Where is it located? What characteristics do its constituents share? What are their concerns? What are their problems? Is the audience homogeneous or made up of many distinct subgroups?

Take as an example the audience for a curriculum product. Perhaps it is comprised of teachers, more specifically, special education teachers, and even more specifically, special education teachers of severely physically handicapped pupils under age eight in a three-state region. Suddenly the audience is in focus -- clarified. Now it's time to figure out how many people there are in the audience, what kinds of media might be

effective in attracting their attention, and which things they might have in common which will help assess how best to communicate with them.

If the audience is not so easily defined by occupation, then it might possibly be identified by the kinds of decisions its constituents make. Perhaps the eventual product needs to reach anyone who does a certain thing -- in this case anyone who influences curriculum decisions. The audience, then, would include teachers, of course, but it would also include principals, school board members, parents, school superintendents, assistant superintendants for special education and curriculum development, and so on. What concerns do these groups have in common? What concerns separate them? As you begin to answer these questions, you can begin to decide what approaches to use with all the subgroups and what approaches might be addressed to each subgroup.

An answer which is given far too often to the question, Who is the audience, is: the general public. This is really not an answer because it implies that the decision maker knows nothing about the age, occupation, location, or other characteristics of the audience. But what the decision maker usually means is that the audience is so broad and so varied that it is difficult to make any valid generalizations. The public is a collection of subgroups, and effective communication means thinking about which subgroups are most important to the attainment of the objective, what the distinct information needs are of each group, and what will motivate them. As the subgroups become defined, it may become clear that each one requires a slightly different message, or that each requires the same message, but delivered through a different medium.

The more you know about the audience, the easier it will be to fashion the message and product to get the desired result. If, for example, you want to reach public health nurses in order to encourage their referrals, it would be helpful to know what kinds of information they already

have. Are they aware of the program? Do they know about it, but just don't make referrals? Why not? Is the process too complex? Is there some administrative barrier? Do they misunderstand the program?

In order to communicate, you must ask and answer these questions all the time. When you develop an instructional program for a child, you begin by finding out what the child already knows and can do, and what motivates that child. Advertisers pay substantial amounts of money for audience research to find out who makes the buying decision on particular products and why they choose one brand over another. Generally developers can't afford that type of research and usually their audience is too large to really individualize the message. But the principle is the same, and you must do whatever possible to find out about the target audience. It may be effective to survey a small sample, or just to talk to a few members of the potential audience informally, or to look at what kinds of efforts have been successful with that group in the past. Another strategy is to have members of the target audience review proposed materials, then use their comments to help shape the decision on the product and message.

The Content

The end result of this audience analysis effort should be messages which address the concerns or needs of the target audience and which trigger the desired objectives. Let's return to the mainstreaming example. The general message concerns the self-esteem children derive from being mainstreamed. But as the audience is broken down into subgroups, more specific messages may be discerned. With administrators, the message might stress the educational benefits and cost effectiveness of mainstreaming. The message to teachers might address the "how to's" of dealing with handicapped children in the

regular classroom. The message to parents might try to allay their fears. The end result might be a single media product (a slide tape) which addresses each audience and message, or a series of separate products (brochures) geared to each audience, or a combination of both. The point is that when the basic questions of who, what, and why have been thoroughly considered and answered, the next question is: What should be produced that will fulfill the objectives? This planning process need not be long. It may be possible to sit down and in 10 minutes write out the objectives, audience(s), and message(s) in three or four sentences; if so, then proceed. But if these are not clearly enough focused so that they can be written out, it is necessary to take the time to think and plan. This time will be well spent.

With the basic plan in hand, you are ready to make media decisions about what to produce, in other words, what medium will be most effective. The range of choices is almost infinite. The variables that must be considered are:

1. **Appropriateness.** What is the best format in which to present the material?

2. **Use.** How will the materials be used?

3. **Timeliness.** Are there any deadlines for the finished material?

4. **Production requirements.** What skills and facilities are needed to produce it and do they match the skills and facilities which are accessible?

5. **Cost.** What is the cost to produce, to market, to use, and to reproduce the material?

Appropriateness. Let's begin by examining appropriateness. There is a natural tendency to wish that media decisions could be made neatly and with scientific

precision -- just plug in the target audience, topics, and objectives, and out comes the answer. Unfortunately, it doesn't work that way.

Our creativity enables us to find all sorts of solutions to media questions; even when taking into account budget constraints, there is always more than one way to approach a problem using media. This is not to imply that all content and all objectives are equally effective in any medium. What can be done cheaply and effectively in one format might be expensive and ineffective in another. And some things just naturally lend themselves to one kind of presentation rather than another.

One important point to remember is that face-to-face communication makes any media product more effective. If face-to-face communication is feasible and cost effective, then it should be used. Developers' goals, however, are usually a bit more complex than motivating consumers to buy Brand XYZ soap. So media materials, standing alone, are usually not sufficient to achieve the communications and instructional objectives. Developers can use media most effectively as part of a total communications effort, which includes interpersonal communications. Certainly most curriculum material fits this description. So do other materials; a film or slide show about a program are far more effective if used as part of a speaking presentation than if merely sent out alone on request.

Although the exceptions are numerous and often notable, some types of topics gravitate to certain media. Appeals to our attitudes and emotions are generally portrayed most effectively with visual material -- especially audio-visual material. Films and slide-tape presentations can use pictures, voices, and sound effects that give the viewer a genuine feeling for time, place, and people. But, of course, so do all the great novelists, and they use just the printed page.

Conversely, vast amounts of technical material in a film or slide show would probably either go past the audience too quickly for them to retain the information presented or move so slowly that the presentation might not retain the audience. There are, however, excellent examples of audio-visual presentations on technical issues. They might be self-instructional units designed to be used at the viewer's pace, or they might be supplemented with workbooks and classroom exercises, and so on. It is probably apparent by now that the medium for any given objective is not solely dependent on the nature of the objective; that is just one in a cluster of variables.

Use. How the material will be used is another variable. The thought given to determining the audience in the preliminary planning stage helps determine how the material will be used. Will it be used in a classroom, a one-day seminar, a presentation, a one-to-one consultation, or sent out to a mailing list? It is painful to think of the money wasted on materials which were produced without any thought given as to how they would be used; when the time came to use them, they weren't appropriate, or they never got into the hands of the target audience. When deciding to produce audio-visual materials, consider the ease or difficulty of showing the materials. Films are easy to show, and projectors are usually the easiest piece of equipment to find, borrow, or rent. Video equipment varies greatly. In theory it is as easy to show a video tape as to turn on a television set. But if you don't own or have access to that equipment, you may someday have to show that video tape on a monitor that makes the program look like news footage of a blizzard in Duluth. Even when you have the appropriate video equipment, if the use of the material calls for a lot of travel to conferences and workshops, try the following: pick up the monitor and carry it around the building twice and then think carefully about what medium you want the material shown in after all.

The same warning goes for slide-tape presentations. If the product must travel, it is best to avoid multiscreen

multiprojector slide-tape shows. If you can bring the audience to you, then multi-image shows can often be even more exciting than film and far less expensive. But if you have to take the show on the road, or if you have to send it out for someone else to show, single-projector programs are best. One screen, one projector slide-tape presentations are portable and easy to use.

If you plan to send out the material regularly to be used by others, then it would be best to know in advance what kinds of equipment are available to them. The product should be offered in a format compatible with the equipment to be used by the audience. Fortunately, audio-visual products are flexible. Slide tape and film can both be converted to video tape for distribution, if that is what is needed. Slide-tape shows can also be made into filmstrips. If access to equipment is a problem or if the target audience is best reached individually, then exclusively use good print materials. They are always easy to use and easy to transport.

Very often developers are confronted not with a single media decision, but with a series of decisions: What do people need to see or know about the program before going into detail with them? What additional materials must they have in order to use the program's curriculum? What can be used to answer general inquiries? In other words, different goals for different audiences mean different messages; thus, it may be necessary to produce different materials to be used individually or together in the appropriate situation. What results should be materials that work together. As an example, your project might need a slide-tape show with an overview of the program, a printed curriculum guide for teachers, and a general fact sheet and brochure.

Timing. In addition to how media products will be used, when they are needed is another key variable in the decision about which medium to select. Everything that is

produced well takes time. Even rush jobs take time. Planning, writing, and producing the materials are necessary whether the product is a simple brochure or a 30-minute film. No two products have exactly the same timeline. Everyone has at least one story about a brochure or slide tape that took longer to produce than Gone With the Wind, with less spectacular results. Nonetheless, there are some reliable minimum time commitments. The printer will take from one week to two months, depending on the size and complexity of the project, to return finished print materials. How long it takes to write, design, type or typeset, paste-up, and proof a brochure, booklet, or book must be added to the printing time. Most printers, given specific information and accurate delivery time of the rough or camera-ready materials, can give accurate production time estimates.

Audio-visual products take longer. Even a very simple slide-tape presentation will take a month to plan, write, shoot the slides and graphics, record the narration and music, and synchronize. It has been done in less time, but what usually suffers is the program's quality, the producer's health, or both.

Films are expensive and rushing production is foolish. A good 15- to 30-minute documentary would reasonably take anywhere from three or four months to a year. The time it takes to produce video materials varies greatly with the content, intended use, and format (1/2" open reel, 3/4" cassette, or 1" or 2" tape). A 20-minute tape of a staff training session of a child and a therapist interacting could be shot in one afternoon. A tape which follows a child over time, compares children, or surveys teaching techniques requires much more time to shoot, and editing becomes part of the schedule as well. Distribution time or television programming schedules will need to be considered in appropriate cases.

Production Requirements. The production requirements, both skills and facilities, are the next variables to consider. Skills include those available in-house, through volunteers, or through paid experts. Almost any product, from a brochure to an audio-visual presentation, with various exceptions, can be produced by amateurs. Unfortunately, sometimes they look amateurish.

Print materials are definitely the easiest to produce. If anyone on staff has an eye for materials that look good, can use a few simple tools of the trade, and can write clearly, a developer can produce effective printed materials in-house; however, when in-house talent is limited to prose suitable only for grant proposals and to design favoring the phone book, then, luckily, skilled help in writing and designing print products is usually easy to find and not too expensive.

Slide-tape presentations can also be done rather simply. A good amateur photographer who can write clearly (always an important skill) can easily pick up the rest of the skills --simple graphics and sound recording. For the in-house producer, Kodak (see Resource Section) publishes a series of excellent publications on producing slide-tape shows.

Simple video is truly simple -- just turn it on and point the camera. As video shows become more ambitious, the technical equipment gets more complex and the skills become more specialized. The biggest problem with video is access to the right equipment. If the equipment is available, however, anyone not intimidated by lots of knobs and dials can learn to use it.

These various skills are technical in nature; the most important skill, however, is creative thinking. Creativity means taking the sentence or two identified as the message and coming up with an exciting, attention-getting, memorable, motivating way to present it. It means finding a style and approach that will grab the audience's attention and not let go. If the creative ideas

are generated in-house, people with technical skills are relatively easy to find. If help is needed with the creative aspects of the materials, search it out. It costs almost as much (sometimes more) to produce drab printed materials and yawn-stimulating audio-visual materials as it does good ones. And what can result from overambitious and ill-prepared endeavors is a bargain price on a product that doesn't do the job.

Costs. Probably the most common question asked in making media decisions is, What will it cost? Obviously the cost factor is important, but it shouldn't be the controlling factor in all media decisions. The cost of producing materials in any medium varies over a broad range and the ranges for different media overlap. Given a fixed budget, there is still a considerable choice of which medium to produce materials in. Within a given medium, the budget will be very different for the Rolls Royce model than for the Toyota. To carry this automotive metaphor one step further, the secret to producing media materials is similar to that in marketing cars. Most people can only afford the compact car, but if it has the look and feel of the Rolls, it will be a big success. Fortunately, this kind of creativity in design is more plentiful in media production than in building cars.

Part of the creativity in media production is taking the resources that are available and making the best possible product. Current feature films offer an analogy. Heaven's Gate cost nearly $40 million to produce and still is a critical and financial failure. The Return of the Secaucus Seven, a recent success both critically and financially, was produced for about $60 thousand. The point these two extremes illustrate is that a big budget is no guarantor of quality, nor is a small budget necessarily a barrier to it. What the writer/director of Secaucus Seven did is what all of us must do to develop effective materials in any medium. He looked at his resources and planned a film that he could produce with that budget --

no cast of thousands, no elaborate costume drama, no car crashes or burning cities -- just creative writing and professional production. The onus on educational product developers is to produce products that are creatively designed and planned so that the budget available allows for quality production. Simplicity -- of design and production -- is not synonymous with inferiority; simplicity is, rather, a governing concept for decision making which often results in superior products.

With that preface, let's examine some of the figures. Print materials can be produced at low cost. A brochure designed to be printed on colored stock with one color of ink might cost under $100 for 1,000 copies. Black and white photos, additional colors of ink, and more pages all raise the price, but not dramatically. Of course, a few more pages, slick paper, and full color photographs will result in the Rolls Royce model, and the costs will reflect the difference. One full color photograph will add $300 or more to the production of those 1000 brochures.

Book-length documents are naturally more expensive, especially if the pages are typeset rather than typed. Still, there are many options on the kind of cover design and method of printing and binding, so that a 100-page document might cost from $1,000 to $5,000 to produce.

Economies of scale are especially dramatic with printed materials. In the example of the simple brochure above, the first one off the press would cost about $85, the next 999 about $15. The book that costs $5,000 to produce could have a unit cost as low as $2 each -- if the number produced is large enough. So, when designing print products, design them to last -- (don't put the entire staff's names on the brochure) -- then print as many as can be reasonably used and a few extras. A few extra printed brochures or even large books cost very little compared to the expense of reprinting.

Slide presentations can be produced as cheaply as the cost of a roll or two of film. A more reasonable estimate for a

10-15 minute show with slides, simple graphics, narration, and music, if done in-house, is about $300 to $500. For a slightly more sophisticated production, a professional might ask $3,500 to $7,000. The equipment needed to produce and show a slide-tape presentation (35mm camera, slide projector, and cassette tape recorder) will fall between $1,500 and $2,000.

Video production gear is expensive -- $10 thousand minimum for a camera, recorders, and monitor, which give only the most rudimentary editing capability. The sky is the limit on video equipment cost. Fortunately, many schools and universities have video facilities to which developers might have access. The cost of video tape is about $30 per hour, and it is reuseable. As a consequence, video materials can be produced very cheaply. But a warning: video often reflects the cost it took to produce it. High quality video materials suitable for television broadcast can be just as expensive as film.

And how expensive is film? For even a relatively simple film, a filmmaker would budget between $1,000 and $2,000 per finished minute. An in-house film unit of a university media center or a public or commercial television station might charge only $400 to $600 per minute. Film is not a medium to be ventured into on a shoestring budget.

Cost has another dimension which needs to be considered as well. Money is not the only budget item; time is valuable. Consider how much time members of the staff are investing in developing and designing any media product. If two or three staff people spend six months developing a terrific parent training module, it may be false economy to budget only a couple of hundred dollars to package and distribute it. Some money can be saved by producing materials in-house, rather than paying a professional; the trade-off is money for staff time. If staff energies are better spent elsewhere, then this approach may also be false economy. So, when you make media decisions, consider cost factors as both time and money.

Summary

Making appropriate decisions about media is not difficult if the process is considered carefully. By identifying goals, audiences, and messages, needs come into focus. Then, when considering the variables of appropriateness, projected use, time deadlines, available skills, and costs, the range of possible alternatives will narrow. What makes any media decision a good decision is successfully applying creativity to the product's design, style, and approach. Communication is both a science and an art, and the best materials are those that successfully combine thoughtful planning with inspired production.

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Marketing Concerns: Design to Distribution

Carol Daniels

Marketing has been defined by Webster as "all business activity involved in the moving of goods from the producer to the consumer, including selling, advertising, packaging, etc." To the developer of educational materials, this definition might be applied to the actual distribution of finished products. Marketing concerns, however, come into play much earlier -- during the developmental stages of a product, even to the conceptualization and planning stages of the product. In order for a product to be ultimately marketable, there must initially be a close match between product objectives and audience use. Furthermore, these products should prove to be "marketable" whether the developers themselves or a commercial company are involved in moving the product to the user. Therefore, it is important that product developers address marketing concerns during the planning, creation, and testing of their products.

For developers working under government contracts, the materials to be produced are probably specified in the contract. Those working under grants are probably committed to the development of a process (conducting research, studying a given population, conducting workshops, etc.), but in many cases, tangible materials such as booklets, tests, films, tapes, and the like will be needed to accomplish or demonstrate the process. For either grantees or contractors, thorough planning with the end user in mind, awareness of factors that could make the final product more useful and therefore more likely to be used, and willingness to adapt the materials based on use will make the final product more marketable. Also, it is more economical in dollars and time to develop materials for a future use which is independent of developer involvement and to keep in mind from the beginning a potentially larger audience than the original audience of the specific model project. Making decisions about the potential future use of a product not yet developed or a broad audience for its distribution are, in many ways, "best guess" efforts. With preliminary market research, however, these "best guesses" can become informed choices, and information gathered becomes guidelines. Crucial to a market analysis is information on the target audience, the competition, and various marketing influences.

Knowing the Competition

When publishers and producers review a prospective new product, questions frequently asked about the product include: 1) How is the product different? 2) Why is it better than existing products? and 3) Has it been proven effective with the intended audience? In order to answer the first two questions, the developer must be aware of already existing products which may be similar to, and

therefore considered competitive with, the planned product. Although contracts and grants contain certain specifications, developers still have some room for choice, and knowing in advance and checking out what available products are similar to the one planned help developers to plan their product so that it is of more benefit to the ultimate users than those presently available, and therefore more marketable in the eyes of potential publishers.

A number of strategies and resources can be utilized to conduct a competitive product search. A natural starting point is the expertise of the developer or the developer's colleagues. Chances are that the developer and/or the colleagues will be aware of several products that are currently being used to accomplish the objectives of the proposed product. The developer can ask members of the target audience or those who work with the target audience about products or resources currently being used. Personnel in instructional media centers and professional education libraries can be excellent sources of information, and they can frequently offer feedback from the practioners they serve. In addition, the developer can scan professional journals and newsletters to locate advertisements and relevant reviews of products that may be similar to proposed development efforts.

Developers can also obtain catalogs or brochures from companies or organizations that have published or produced products in the area under consideration. Some of the larger publishers have field representatives who are knowledgeable about educational products. They can be invited to offer product demonstrations as well as to discuss the proposed project. Developers can also consult specialized bibliographies, catalogs, or reference books that have been compiled by information specialists in various fields. Organizations serving a particular handicapping condition and those focusing on a particular curriculum area often provide such specialized resources.

To do a more thorough search, a developer can use the information services provided by the appropriate national clearinghouses, many of which maintain large computerized databases, to obtain comprehensive, current resource listings. To avoid the common pitfall of such services--information overload, with few useful references--the developer should take the time to discuss the specific request in detail with the person actually conducting the search. The more information provided, including explanation of professional jargon, the better the chances of retrieving manageable and pertinent information.

A sampling of national information clearninghouses is included in the Resources section. The nearest librarian or resource center director can provide additional information about those listed and about other sources available. In many instances, the local information contact can provide searches of these databases at no charge or for a nominal fee.

Factors Which Affect Marketing

Marketing involves many factors that must be taken into consideration during product development in order to end up with a product that can be distributed to its widest potential, whether the distribution activity is commercial or not. Knowing about these factors will save time and money in the long run and will result in a product that will prove useful to the most people possible. Generally, these can be classified into factors 1) within schools, 2) external to schools, 3) within or related to government (state and federal), and 4) within the publishing industry.

Factors Within Schools

Shifts in academic emphasis, product efficacy, user reaction, budget allotments, and current instructional materials are major factors within the school setting which should be considered during product development. The developer should give thought to the following questions.

- Stress on back-to-basics. With today's stress on back-to-basics, where will the instructional materials dollars be spent?

- Emphasis on accountability for learning by students and accountability of instruction by teachers. Is there a means of proving that the product under consideration actually teaches or improves skills?

- Reaction to product by teachers and students. Is this product being developed according to accepted teaching practices and will the students react favorably to the product?

- Amounts of money available at the local level to buy instructional materials. After salaries, energy costs, busing expenses, and so on are taken out of the budget, how much actually is left to purchase instructional materials?

- Types of instructional materials presently used. Is this product an improvement over the type of instructional materials presently being used for the same purpose? Is the product adaptable to computer software for future use?

Factors External to Schools

Similar to the previous factors within schools, external factors to be considered include budget allotments, product efficacy, reaction to product, and sales levels. Any may strongly influence the marketability of a product. Responding to these factors during product planning, and designing the product in accordance with the results, can significantly improve the marketability of the future product. These factors include the following:

- Reaction to product by parents, school boards, and others. Will they find the content of the product acceptable for use with students?

- Rising costs due to inflation. Will there by any instructional materials dollars left after available funding is used for raises negotiated by unions, higher energy costs, increased costs of busing, and other items?

- Problems with sources of school support due to taxpayer revolts. If taxpayers continue to refuse to support levies for school purposes, will alternate means of support be forthcoming and, if so, will they be adequate to cover instructional materials?

- Emphasis on standardized testing. Will this product teach materials that are included in standardized testing? If not, are there data to support the value of this product?

- Elementary-high-school sales. Are the sales being generated by publishing companies adequate to encourage any of these companies to add this product to the line?

Factors Within the Government

Federal mandates and budget allocations also greatly affect the sales of newly developed educational materials. The developer should consider the following factors:

- Amounts of monies appropriated by the federal and state governments for education. With the changes in federal funding for education, how will the states allocate the money, and will the states compensate for the cuts in federal funding?

- Federal mandates on populations to be served by the schools. Will the instructional materials dollars that are available be spent on the populations the federal government has mandated to be served, will those dollars have to be shared, and what are the chances that those mandate will continue?

Factors Within the Publishing Industry

Even given favorable internal and external circumstances, and Federal and state allocations, factors which affect marketing decisions exist within the publishing industry itself. These include:

- Determination of the importance of allocating resources for the acquisition of materials. In light of today's economy and market, are publishers keeping staff product developers on salary? Are publishers looking for products that are already developed but need refinement, packaging, inventory, and marketing? Are publishers reluctant to add new products?

- Importance placed by publishers on materials that are completely developed and field tested. Are

publishers concentrating on completely developed and tested materials because they are cautious about the market and want to be sure that any addition is as sure a bet as is possible? Are they cutting back on staff developers? Are publishers aware that purchasers are becoming more discriminating in light of shrinking instructional materials dollars?

- Publishers' view of the elementary and high school market. What do publishers consider the overall potential of the market? What are publishers considering marketable products, given all the forces at work? Is there a need for specific materials and are there dollars available to buy them? Are publishers actively seeking new products?

Whether planning to find a commercial publisher or a marketing agency, ultimate success depends on whether publishers feel that the designated buyers (e.g., school districts) will not only want to purchase the product, but on whether they will have the funds available to purchase it. If publishers hypothesize that the answer is no, the product will not be marketed commercially, no matter what marketing avenue is pursued.

Whatever means are used to market a product, there is always the need to determine at what stage of production it should be marketed. Unfortunately, there is no set rule. Each publisher has standards of what is thought to be commercially appealing; therefore, submitted material will probably be reworked somewhat, if only to rearrange the cover or reorganize the front matter. Also, publishers are concerned about the cost of production, and formats may be changed to reduce cost if commercial publication is desired; therefore, a lot of project money should not be invested in a perfectly finished product unless it is a requirement of the contract or grant.

Common Issues in Educational Product Development

Common issues arise that have been known to prevent the commercial distribution of educational products. These problems and accompanying explanations are presented to offer an idea of some factors to consider when developing a product.

Completeness. The product must contain all components essential to effective use. A typical example of not being complete is the omission of user instructions that would permit the product to stand alone, independent of developer assistance. A curriculum, for example, with no instruction to the teacher on how to apply the new concepts and materials it contains, either via an instructor's manual or in an introductory section, will not stand alone. Without these instructions, a teacher new to the curriculum would depend on a consultant or inservice trainer for methods of using the materials.

Timeliness. The product must reach the market before others have produced a "local" product to meet the need. The product must represent an instructional approach that will be accepted and used by practitioners at the time it will be available. Given market economics, the product must reach a publisher at a time when the publisher has resources available that allow for manufacturing, marketing, and distributing the product. Although a developer cannot predict the finances of a publisher, he or she should be aware that even if the product is effective, a need for it is demonstrated, and a publisher is interested, financial commitments may prevent that publisher from handling the product. Timing is critical.

Target Audience. The product must fit the needs and characteristics of the target audience. In characterizing the target audience for a product, it is helpful to consider them as primary, secondary, and alternate users. The primary audience comprises those users for whom the

materials are specifically designed (e.g., children are the primary users of a curriculum). They are the ones who will benefit from the program, and they are the ones for whom most of the program materials will be designed. Product developers must keep in mind, however, those who will be buying the materials for the users. They are the secondary users and, in terms of marketing, they may be as important as, or in fact, more important than, the primary audience. It is important to remember that children do not make buying decisions about their instructional materials; principals, learning resource specialists, and teachers do. School boards and parents, among others, may influence some of those decisions.

Alternate audiences are also important in terms of distribution potential. Many times, alternate audiences emerge as the product is developed when people see, hear, or read about it. Other times, it is possible to predict alternate audiences. For example, the primary audience for a certain curriculum might be elementary level, visually impaired students; with only slight modification, however, the developer might find that secondary-aged mentally retarded students can use it as well: an alternate audience has been determined. Needless to say, alternate audiences increase the market for a product and, thus, increase its appeal to commercial publishers, producers, and disseminators. Of course, the first obligation of a developer is to prepare materials in the way that is best for the primary audience; but if at all possible, the developer should identify alternate audiences and design the product for their use as well. Generally, this can be done with no detriment to the primary user and with great benefit to the marketing potential of the product. Provided the materials are prepared well, materials with greater audience potential stand a greater chance of attracting publisher interest.

In tailoring a product for primary and secondary audiences, many characteristics must be determined, including: age, reading level, disability, occupation/training, and needs and interests. Assessing

your audience along these dimensions will provide valuable information for product development. The closer the product design is correlated with the characteristics of the intended audience, the higher its probability of success. The most valuable source of these kinds of data on potential audiences will probably come from the developer's own expertise. As educators, developers of educational products are already aware of the potential users for their materials, and they know other professionals and organizations who can help pinpoint audience size and location. In addition, various agencies and organizations publish helpful information.

Content Appropriateness. The content must be in proper scope and sequence, organized and presented properly, and appropriate for use with the intended audience. Surprisingly, a problem which arises frequently is that the reading level of a product is inappropriate for the target audience. For example, a product tailored for use by teacher's aides which is written in language suitable for a professional journal may be difficult for the aide to understand, and, therefore, will not be used. Likewise, reading materials for 12th-grade deaf students written at a 12th-grade nonhandicapped reading level, will certainly miss the mark. Failure to determine the appropriate reading level for the intended audience is no small problem, as the ultimate impact is that the product is not used. There are various readability graphs that a developer may use for a product; some of these are included in the Resources section. Or, the developer may access a free readability analysis service.

As part of LINC's technical assistance to Special-Education-Programs-funded grants and contracts, a new service involving the use of a special computer program is being offered at no cost to product developers. By submitting a 100-word sample of text, LINC can use the special program to return the results of up to seven different standard readability tests. The new service is provided in cooperation with the Minnesota Educational Computing Consortium (MECC), part of the Minnesota

State Department of Education. LINC has been authorized to use the MECC computer by remote terminal access. This procedure ensures a prompt response because the analysis can be performed in less than 15 minutes on the day the request is received. The text analysis program provides a report that includes data on the number of syllables and grade-level equivalent scores. The tests used in the program are: Dale Chall, Fry, Spache, Flesch, Gunning-Fog, McLaughlin Smog, and Raygor. Regardless of the methods used, it behooves the developer to determine the appropriate reading level.

Editorial and Technical Standards. The product should not require extensive revisions, reshooting, or retaping, and must allow for reproduction based on commercial publication standards and requirements. Although publishers have editors on staff who will edit and prepare products, they are reluctant to deal with a product that needs complete rewriting due to poor organization, inappropriate reading level, sexist or racist language, misrepresentation of handicapped people, or other problems. Also, pictures accompanying print materials should reflect accepted representation and nonsexist standards. It is a wise investment of contract or grant money to have audio-visual materials produced by professionals or at least to have the advice of professional consultants. Commercial companies are willing to edit and make small changes in audio-visual materials, but they are not interested in those which require reshooting or major work, or those for which the master materials lack the clarity and detail required for duplication.

Effectiveness Data. The product must be shown to work effectively with the user; therefore, field-test data, validation information, and requests for or reviews of the product should be available and as complete as possible. While maintaining lists of known expert reviewers, publishers also frequently request that developers of educational products recommend their own reviewers. Collecting reviews in advance of contacting a publisher, then, will save time for both parties. A modest collection

of thorough, favorable reviews written by prospective users and qualified content specialists may do much to turn a publisher's interest from mild to keen. Information gathered through these reviews should sweep from content issues to packaging, and the information should be synthesized, interpreted, and presented in a brief, organized fashion.

Product Format. The format must be appropriate to the user objectives, and it must be cost effective to produce, market, and distribute. For example, a media format requiring a bank of seven projectors and dissolve units may work on a small-scale basis for limited project use, but it is impractical for large-scale production and distribution, and it is unlikely to be used by school personnel. To be competitive, formats should be similar to those of comparable products.

Market Scope. The product must have a large enough potential market to warrant publisher investment to produce, market, and distribute the product. Some small specialty publishers and various organizations do specialize in what are called "thin market" products, that is, those which may appeal only to a very narrow audience. Even for those, the product must be wide enough in scope to warrant interest.

Prior Dissemination. The product must not have been disseminated in such a way that the potential market is saturated, therefore resulting in a low sales projection. If commercial distribution is even a remote prospect, be sure not to disseminate the product in advance.

Legal Issues. The product must be free from irresolvable legal problems. Some examples of these include being unable to obtain needed permissions and releases because the people cannot be found or are unwilling to give them, using copyrighted material, or failing to comply with U.S. Education Department copyright protection requirements so that the product is, in fact, in the public domain, and not available for a commercial copyright.

Ownership of the product must be clearly established to the satisfaction of all involved parties, or it is impossible to negotiate a licensed product successfully. It is necessary to clear all ownership issues with the federal funding agency before seeking commercial distribution.

Some requirements as to distribution and/or dissemination by federally funded contractors or grantees may be predetermined by the government. Meeting these requirements must be the first consideration. At this point, it is important to determine whether to copyright the materials. Work can be duplicated without the developer's permission if the material is not protected by copyright. In some instances, such duplication of materials in the public domain will serve the purpose of dissemination. When planning to become involved with commercial distribution at any time, however, it is essential that the material be protected.

If commercial distribution is even a faint prospect, it is the responsibility of the developer and/or the developing organization to maintain reasonable and responsible control of the materials prior to copyright so that the product does not enter the public domain. Failure to document and demonstrate such control can forfeit the ability to place the work, as intended, under copyright. To avoid publication of a work without the developer's consent when circulating copies, the Copyright Office advises that the developer should place notices on any copies which are out of his or her control.

For products produced under federal grants and contracts from the U.S. Education Department, it is suggested that the following notice be used:

NOTICE

This work is not published; it is produced to fulfill requirements of (Grant or Contract Number _____) from the U.S. Education Department.

> It is in the process of distribution to a limited audience for the purpose of _____ (i.e., evaluation, field testing, etc.). This work may not be reproduced or distributed in any manner without the developer's prior written consent and authorization.

New regulations governing the copyrights of federally funded products developed under grants are included in the Education Division General Administrative Regulations (EDGAR) published in the Federal Register of April 3, 1980 (Part II). An interpretation of how these regulations should be applied can be obtained from the Copyright Administrator at the U.S. Education Department.

The issues mentioned thus far in this paper are concerned with the design (planning and development) of educational products. Table 1 presents a checklist which can be used by the developer to determine if various important marketing questions have been answered prior to considering avenues for distribution. The next part of the paper is concerned with the distribution of those completed products.

Product Distribution: Options

Options for distributing products include: by developer or through a commercial order-processing and shipping firm; through the Government Printing Office (print products); through the Educational Resource Information Center (ERIC), through the National Audiovisual Center (nonprint products), via nonprofit organizations, or through commercial publishers and distributors. In the case of products developed through contract or grant money from the Special Education Programs or in the case of products

Table 1
Marketing Issues Checklist

1. Is there a need for the product being considered? If so, can you show documentation to that effect?
2. Have you defined your target population, and is your product addressed to that population?
3. Are you keeping your objectives clearly in mind when planning your product? Are you setting up a testing and validation procedure to make sure that objectives are being accomplished?
4. Have you determined the media format to be used based on the audience to be addressed and the information to be conveyed?
5. Have you studied competitive products so that you can make your product different and better?
6. Are you developing and producing your product so that its potential benefit to the user justifies its potential price?
7. Have you avoided media formats that require the user to obtain unusual or costly equipment?
8. Have you chosen a standard high-definition format for audiovisual masters to avoid the need for adaptation?
9. Are you preparing camera-ready artwork in accordance with industry standards?
10. Are you preparing manuscripts in accordance with standard editorial practices?
11. Are you consulting accepted guidelines to make sure that your materials are free from sexism and racism, or misrepresentation of handicapped persons, and so on?
12. Are you ensuring fair and adequate representation of handicapped persons in your materials?
13. Are you seeking editorial, artistic, and technical assistance when preparing your materials?
14. Is the reading level of your product appropriate for the intended audience?
15. Are you complying with all federal requirements for clearances?
16. Are you securing permission to use copyrighted materials?
17. Are you obtaining talent releases from all persons photographed, filmed, or recorded in the course of producing your product?
18. Are you including a disclaimer on your materials and protecting them with a notice that they cannot be reproduced without permission?
19. Has your product been tested and/or validated with the intended audience?
20. Does your product stand alone, independent of you?

addressing the basic skills, a federally funded marketing contractor, LINC Resources, Inc., in Columbus, Ohio, is available to grantees or contractors either currently or previously funded.

In some instances, outside organizations, agencies, and groups might be actually willing to produce and distribute the product(s); in other instances, they might be willing to distribute completed materials. Developers will be familiar with the particular organizations serving their fields, and they must make the necessary inquiries and follow-up. Because there are so many organizations, agencies, and groups, developers should obtain references for organizations serving particular handicapping conditions or for organizations dealing with particular subject areas, and so on. The market information specialist at LINC is available to provide suggestions for market possibilities.

The bottom line is how best to reach the ultimate user of the product. If the total audience is limited and/or difficult to reach, it might be best to produce and distribute the product with project money. If project money is extremely limited, distribution could be placed on a cost-reimbursement basis. A developer who is unable or unwilling to get involved in creating and maintaining inventory, processing orders, and billing and handling, could contract with an outside agency. This would handle the end where the orders are filled, but would still leave the matter of stimulating the market up to the developer. Presentations at meetings and conventions, flyers, journal articles, and other forms of publicity are various methods for stimulating product interest. Although many of these techniques will have been used during the development of the product, additional sales require additional marketing efforts. Both the Government Printing Office and the National Audiovisual Center conduct marketing efforts for those who publish material through their agencies.

Contacting A Publisher

The first step in commercially marketing a product is to identify those publishers most likely to be interested in it. Again, resources exist which describe the types of materials handled by certain publishers. Once the most likely publisher for a particular product has been identified, the next step is the contact. Publishers should be contacted by letter (preferably one page, certainly no more than two). The letter should describe the content and objectives of the product, tell something about the market dimensions and potentially competitive products, give a one- or two-sentence summary of testing activities and results, and indicate whether the necessary permissions and releases are on file. There must be substantiation for all statements and assurances. In addition, a short (five pages or thereabouts) outline of the content of the product should be included, as well as a first chapter or its nonprint equivalent. If, after four weeks, there is no reply, a follow-up letter summarizing the content of the first packet (mention its date) should be mailed. If the material is subsequently rejected, the process should be repeated with the other prospective publishers/producers on the list.

In addition, a product needs an advocate -- someone at the publisher who senses the need for and the potential of the product and who will champion the cause--as each product must vie for attention and investment dollars. The best way to secure an advocate is to make sure that a specific person has been identified as the best contact in the publishing house for the developer's needs. A name should be used in addition to a title. Literary Market Place and Audiovisual Market Place both provide names of the various contact people. In many cases the Acquisitions Editor will be the person to contact.

Unless a developer is lucky enough to stir publisher interest with little or no solicitation, it is extremely time consuming to ferret out publisher interest. Publishers are

inundated with new product prototypes and new product ideas, and many of the larger publishers either have their own people involved in product development or they hire consultants to develop products for existing markets. And many publishers reject 95% of submitted products. Therefore, a product developer must plan on devoting a great deal of time to writing letters, making phone calls, and following up on those activities.

Marketing Organizations

If a developer wishes to pursue commercial possibilities, but does not have the time to devote to the effort, contacting a marketing organization might be appropriate. There are fees involved when dealing with a professional marketing agency, and costs will have to be evaluated as to whether project money will be used most effectively by hiring a professional marketing organization or by using project personnel time in the marketing endeavor. The advantage of working with a professional marketing organization is that marketing is their key activity and as such, procedures are in effect to represent and market products. In most cases project personnel are unschooled in marketing; trial and error marketing procedures can waste both time and money.

LINC Resources, Inc.

Projects with contracts or grants from the Special Education Programs and federally funded projects in the basic skills, including state grant programs, have the option of working with marketing programs that have been funded by the U.S. Education Department and are contracted to LINC Resources, Inc.

Because of the procedures utilized to give everyone interested fair access to the products that have been developed wth federal funds, there is a time element to consider when dealing with LINC. The average time from when a product is submitted to LINC through the licensing period runs from four to six months, depending on when the next Task Force meeting is in relation to the time the product is submitted, and depending on how long the licensing procedures take. The advantage of dealing with LINC is that all the time-consuming marketing activities are handled by LINC, and because LINC has a track record of bringing federally funded products to market, publishers and producers look to them for products and are willing to deal with the licensing procedures that take place. In addition, LINC has a full-time attorney handling the licensing negotiations. Of course, dealing with organizations whose main function is marketing certainly does not guarantee that your product will be licensed. All the marketing influences noted earlier apply to marketing organizations, too; nevertheless, working with a marketing organization might increase the odds of getting products licensed. It is a simple process to access the marketing efforts of LINC. Special-Education-Programs (SEP)-sponsored projects need to have their Project Officer contact the director of the marketing program at OSE. Federally funded basic-skills grantees or contractees state and grant programs need to have their Project Officer nominate their products and forward the nomination to the Project Officer for the Basic Skills Improvement Program.

The procedures followed by LINC once an authorization to handle a product has been issued are presented in the following discussion.

Product Intake. Once LINC has been authorized to begin work on a product, staff members contact the developer to make arrangements to obtain a copy of the product and any related information necessary to determine commercial marketability. Product materials received by LINC are logged in and quickly reviewed for

completeness. Additional contacts are made with the developer to ensure that LINC has received a complete and accurate set of materials, to inform fully and involve the developer in the marketing process, and to help resolve potential legal problems that may preclude commercial publication (e.g., copyrights, talent releases, permissions).

Product Profiling. Each product is reviewed by LINC staff members, who prepare a complete profile of the product. This profile forms the basis for Marketing Task Force review, "LINC Product Alerts," "Special Announcements," licenses, and all other communication about the product. Developers participate in the profiling process and, by implication, later communicate to publishers through written and verbal input during the profiling process. Each profile consists of descriptive information in each of the following areas:

- Editorial: A description of the product content, purpose, uses, format, audience, and organization; information that will allow publishers and producers to judge the amount of effort required to revise, update, edit, and/or produce the product.

- Market: A search and report on competitive products and an assessment of current conditions that might affect the product's marketing and distribution.

- Technical: Information that will allow publishers and producers to judge the amount of effort and cost required to produce nonprint products and the extent to which the product meets commercial technical standards.

- Legal: Documentation of releases, permissions, government clearances, or other legal documents obtained and/or required.

Marketing Task Force. Products are reviewed and evaluated for their commercial marketability by a

Marketing Task Force made up of publishers and producers, three of whom represent the commercial trade associations, and educators representing national, state, and local education agencies. The Task Force focuses upon marketing concerns, including potential audience, production quality, production costs, market demands, field-test data, and educational relevance, and extent of any revisions needed to meet commercial market standards.

Product Alert. Products that receive favorable market appraisals from the Marketing Task Force are presented to over 600 commercial publishers, producers, and distributors through the "LINC Product Alert," which describes the features of the products available, or to a lesser number of selected recipients thorugh a "Special Announcement."

Publisher conferences, held by LINC approximately three weeks after announcements are mailed, give interested firms an opportunity to meet with the developers of the product and to view product materials. In addition, LINC provides excerpts and copies of the products to interested publishers for their in-house review.

Publishers, producers, and distributors who are interested in a product announced in the "LINC Product Alert" or the "Special Announcement" submit a proposal for production and distribution of the product to LINC approximately three months after the announcements are mailed.

Review Panel. After companies submit publication proposals for the products, LINC convenes an independent review panel to assess and analyze the proposals. Publication awards are offered to publishers based on the information contained in their proposals. Because the overall goal of the Marketing Program is to increase the availability of education materials, four broad criteria are applied in determining which publishers should receive awards: publisher resources committed, publication schedule, publisher commitment to becoming

knowledgeable about education programs in order to represent the product adequately, and reasonableness of proposed retail cost per unit. LINC is not obligated to make an award if acceptable proposals are not received.

Secondary Marketing. Products that do not receive proposals as the result of initial announcements receive extensive secondary marketing services. In cases where a product does not receive a competitive proposal in response to a Product Alert, LINC issues noncompetitive announcements to publishers to solicit proposals on a first-come, first-served basis. LINC also makes direct contact with various organizations capable of effectively disseminating the product. These organizations may include the National Diffusion Network, university presses, professional associations, advocacy groups, the ERIC system, the National Audiovisual Center, the Government Printing Office, and other federally sponsored dissemination projects.

Licensing and Reporting. After publication awards have been made, LINC arranges and completes license negotiations for the publication and distribution of the products, subject to the approval of the U. S. Department of Education (U.S.E.D.). LINC then monitors license performance on behalf of U.S.E.D., provides reporting and accounting services to U.S.E.D. (including disbursal of royalties), and assists publishers in obtaining useful information about the effectiveness of the products.

Summary

During the design of an educational product, the developer must be concerned with not only the content and target audience of the product, but with various marketing issues as well, such as unique characteristics,

completeness, timeliness, effectiveness, and competitive characteristics. Additionally, time and cost, local, state, and federal monies available to purchase educational materials, publisher resources, and options for distribution must be considered.

Developing effective, appropriate educational materials is no easy task. There are, however, various resources along the way; a number of these are included in the Resources section. It is hoped that the information presented in this paper can, in some way, provide assistance to educational developers with marketing concerns.

Resources

Publications

Audiovisual Market Place. R. R. Bowker Co., 1180 Avenue of the Americas, New York, NY 10036.

Sections are grouped under three major areas of interest: AV Software, AV Hardware, and Reference. Listings provide the user with the names of industry and related sources, addresses and telephone numbers, key personnel, product lines, services, and so on.

Education Division General Administrative Regulations (EDGAR). Federal Register (Part II), April 3, 1980.

EDGAR represents a codification of the rule and grant-making procedures for the U. S. Education Department. All grants awarded after April 3, 1980, fall under the EDGAR regulations. EDGAR also provides step-by-step help for those seeking federal grants.

Literary market place. New York: R.R. Bowker Company, 1180 Avenue of the Americas, New York, NY 10036.

This directory of American book publishing includes information on publications; various associations; book trade events; courses, conferences, and contests; agents and agencies; services and suppliers; direct mail promotion; review, selection, and reference; radio, television, and motion pictures; wholesale, export, and import; book manufacturing; magazine and newspaper publishing; and, importantly, the names and numbers of contact persons.

The Educational Marketer. 701 Westchester Avenue, White Plains, NY 10604.

This newsletter by executives in educational publishing, materials, and equipment companies provides information on factors affecting the education market. Types of products under development, publishers' sales, meetings, and so on, are included.

Professional Associations

Educational Products Information Exchange Institute (EPIE). P O Box 620, Stony Brook, NY 11790.

The object of this organization is to analyze systematically and collect user data on instructional materials; it also collects user data on audio-visual equipment and test equipment in the EPIE laboratory. Findings are disseminated in EPIE publications such as EPIEgram: Equipment; EPIEgram: Materials; and EPIE Reports. Also published are the EPIE PRO/FILE, a system providing a quick, simple way to screen basic instructional materials programs.

International Reading Association. 800 Barksdale Road, P O Box 8139, Newark, DE 18711.

This organization of individuals engaged in teaching or supervision of reading at any school level; encourages the study of reading problems at all educational levels, publishes Journal of Reading, Reading Teacher, Reading Today, and others.

Knowledge Industry Publications, Inc. 701 Westchester Avenue, White Plains, NY 10604.

This organization publishes books, newsletters, studies, and monographs for managers, executives, educators, and students in the fields of publishing, library technology, video, and other mass communications media. Educational Marketer is published by this organization.

The Association of American Publishers. One Park Avenue, New York, NY 10016.

This association is composed of producers of general, educational, trade, reference, scientific, technical, and medical books; instructional materials, systems of instruction, classroom periodicals, maps, globes, and tests.

The Association of Media Producers. 1101 Connecticut Avenue NW, Suite 700, Washington, DC 20036.

This association is made up of educational media producers and distributors and those companies which provide professional or technical services to the industry. Publishes Survey and Analysis: Educational Media Sales, AMP Tie-Line - a newsletter with major emphasis on government funding, legislation, and programs which affect media markets.

The National Audio-Visual Association. 3150 Spring Street, Fairfax, VA 22031.

The national trade association of the commercial audio-visual industry (NAVA) publishes The A-V Connection, The Guide to Federal Funds for Audio-Visual Users, and NAVA Actionfacts, a newsletter providing up-to-date information on federal education funding legislation.

The National Council of Teachers of English. 1111 Kenyon Road, Urbana, IL 61801.

Teachers of English at all school levels make up this organization which works to increase the effectiveness of teaching of English language and literature. The English Journal, Language Arts, English Education, and other publications are produced by this group.

The National Council of Teachers of Mathematics. 1906 Association Drive, Reston, VA 22091.

This organization is composed of teachers of mathematics in grades K-12, two-year colleges, teacher education personnel on college campuses, and others interested in math. The Arithmetic Teacher, The Mathematics Teacher, a quarterly newsletter, plus selected materials such as An Agenda for Action and Priorities in School Mathematics, are published by this organization.

National Information Clearinghouses

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), Unit on Programs for the Handicapped. 1900 Association Drive, Reston, VA 22091, (703) 476-3400.

The Unit on Programs for the Handicapped operates an information clearinghouse that provides reference services and disseminates topical bibliographies on child-use and professional materials. Special areas of emphasis include adaptive physical education, therapeutic recreation, perceptual motor development, sports, outdoor education, health, safety, dance, and movement education.

Clearinghouse on the Handicapped. Department of Education, 400 Maryland Avenue SW, Room 3106, Switzer Building, Washington, D.C. 20202, (202) 245-0080.

This clearinghouse functions as a "broker" of resources by providing referrals to appropriate information services. They publish the Directory of National Information Sources on Handicapping Conditions and Related Services, a fully indexed reference tool for identifying specialized clearinghouses that focus on topical areas, handicapping conditions, or particular audiences. These clearinghouses may then be contacted directly for assistance in identifying potential competitive products.

Council for Exceptional Children (CEC). 1920 Association Drive, Reston, VA 22091, (800) 336-3728; in VA (703) 620-3660.

CEC maintains a database on the literature of special education, including references to some commercially available media and materials. Emphasis is on reports, manuals, conference proceedings, curriculum guides, literature reviews, legislation, research, and so on. Access is via computer terminal or the quarterly print equivalent, Exceptional Child Education Resources. Contact an information specialist at CEC for more information. Assistance in searching the ERIC database is also available through CEC.

National Information Center for Educational Media (NICEM). University of Southern California, University Park, Los Angeles, CA 90007, (800) 421-8711; in CA (213) 741-5408.

NICEM is a comprehensive, computerized database on all types of commercially available nonprint educational media; it is also available in microfiche

and print indexes organized by media format. Approximately 500,000 titles with brief annotations are included.

Test Collection Clearinghouse, Educational Testing Service (ETS). Princeton, NJ 08541, (609) 921-9000.

The clearinghouse provides reference services in all areas of educational and psychological testing. Topical bibliographies and custom search services are available for identifying commercial and noncommercial test instruments. News on Tests is a newsletter that announces new tests and related references.

This list is not all inclusive. The specific resources a developer will search will depend upon the type of product under development--that is, instructional material, training packet, professional reference, book, assessment instrument, print or nonprint media, and so on. If a developer has any difficulty in identifying appropriated information sources, the information specialist at LINC will provide assistance in conducting a competitive product search. LINC is referenced elsewhere in this chapter.

Government-Sponsored Agencies

Council for Exceptional Children (CEC). 1920 Association Drive, Reston, VA 22091; (800) 336-3728; in VA (703) 620-3660.

CEC maintains a database on the literature of special education, including references to some commercially available media and materials. Emphasis is on reports, manuals, conference proceedings, curriculum guides, literature reviews, legislation, research, and so on. Access is via

computer terminal or the quarterly print equivalent, Exceptional Child Education Resources. Contact an information specialist at CEC for more information. Assistance in searching the ERIC database is also available through CEC.

ERIC Processing and Reference Facility, Acquisitions Department. 4322 Rugby Avenue, Bethesda, MD 20014.

The Educational Resource Information Center (ERIC) is a nationwide network sponsored by the National Institute of Education and is designed to collect educational documents for teachers, administrators, researchers, and students. The ERIC listing announces all documents that have been acquired in a monthly journal, Resources in Education, which reaches more than 5,000 organizations. Documents acquired by ERIC are available in microfiche or photocopy and are distributed to ERIC subscribers and made available by mail order.

Government Printing Office. Superintendent of Documents, Washington, D. C. 20402. (207) 783-3238.

Many federal publications are printed and sold to the public and federal agencies through the Sales Program administered by this office. The office publishes Selected U. S. Government Publications (free) and Monthly Catalog of U. S. Government Publications (subscription). It maintains a sales organization of nearly 1,000 professionals, technicians, and clerks to promote the sale of publications and operates 27 bookstores throughout the United States.

LINC Resources, Inc. 1875 Morse Road, Suite 255, Columbus, OH 43229. (614) 263-5462.

Funded by the Special Education Programs and the Basic Skills Validation and Marketing Program, LINC assists federally funded projects in the marketing of project-developed products.

National Audiovisual Center. General Services Administration, Washington, D.C. 20409. (301) 763-1896.

The Center makes federally produced materials available for use through distribution services and serves as the central clearinghouse of all U. S. Government audio-visual materials.

National Center for Education Statistics. Statistical Information Office, 1001 Presidential Building, 400 Maryland Avenue SW, Washington, D.C. 20202. (301) 436-7900).

This office collects, collates, and reports complete statistics on the conditions of education in the United States. Publishes Projections of Education Statistics to 1988-89 and many other reports.

National Diffusion Network. Far West Laboratory for Educational Research and Development, 1855 Folsom St., San Francisco, CA 94103. (415) 565-3076.

The NDN is a nationwide system established to assist schools, postsecondary institutions, and others in improving their education programs through the adoption of already developed, rigorously evaluated, exemplary education projects. Educational Programs That Work is an NDN publication.

National Information Center for Special Education Materials (NICSEM). University of Southern California, University Park, Los Angeles, CA 90007; (800) 421-8711; in CA (213) 741-5408.

Marketing Concerns

NICSEM has produced a database containing approximately 40,000 abstracts of commercially available materials pertinent to special education. Child-use, assessment, professional, and training materials in print and nonprint formats are included. It is accessible via computer terminal, printed indexes, or microfiche. Contact NICSEM or your state education agency for further information.

The Print Product: Design, Development, and Production

Kathleen Cotton

Developing a product which is useful, attractive, and well-received by its intended audience is extremely rewarding. Some products, however, are not valued and used because they are poorly organized, unwieldy, unattractive, inappropriately formated, too expensive, or because their intended purpose was already adequately addressed by a previously developed product.

The decision to develop a certain product should be based upon an analysis of various factors, including the goal of the project, the characteristics of the target audience, and the content of the product. Considerations of the match between objective and format, use, production requirements, and economics lead to the selection of print or nonprint as the medium of choice. Many decisions must still be made--the specific type of format, printing and binding processes, resource allocations (both financial

and staff time)--among others. The information presented in this chapter is intended to assist you, the educational product developer, in making the decisions required to produce an appropriate, useful, print product.

The following discussion of major educational print formats is organized into five categories -- Awareness Materials, Manuals/Guides, Reports, Student Materials, and Instruments and Forms. The discussion of items within these categories includes commentary on relative costs, most appropriate bindings, and additional factors which may influence format selection.

Educational Product Formats

Awareness Materials

There are various types of print materials which can be used to provide an awareness of a service, practice, or product to a specified audience. Frequently used formats include abstracts, brochures, and newsletters.

Abstracts. Although there are many kinds of abstracts, some containing more detail than others, abstracts of educational products and services generally represent an attempt to capture the essential features of the product or service on a single page. This kind of one-page display is frequently handed out at conferences, posted on bulletin boards, and/or collected with other, similar abstracts within a resource catalog. While they may and often do stimulate the reader's interest in learning more about a product or service, abstracts are not primarily for promotion. Rather, they are generally descriptive, neutral in tone, and inexpensive to produce, relative to other kinds of materials.

The kinds of information contained in a abstract include the target audience for the product or service, its goals/objectives, a brief description of major features, and a source to contact for further information. Longer abstracts may contain additional information, such as evaluation results, detail on the expertise of the service provider/product developer, background information on the product or service, and so on. Efforts should be made to cover all major product/service features as clearly and briefly as possible. An abstract is frequently typewritten and photocopied and, as such, may be developed and produced entirely in-house by project staff.

Brochures. Brochures are usually intended both to provide information about a product or service and to generate reader interest in using it. Brochures are generally aimed at a relatively wide audience, meaning both a sizeable number of people and people with different roles in the educational process -- administrators, school board members, teachers, and parents. Because the purposes are confined to creating awareness and stimulating interest, a brochure is a small product -- generally a single sheet of 8-1/2" x 11" or 8-1/2" x 14" paper, which is folded into three or four panels and printed on both sides.

A brochure may or may not contain graphics or other artwork, but an attempt should be made to create a product which is as attractive and eye-catching as possible. The audience for a brochure cannot be assumed to have a prior interest in the product or service; more often than not, the brochure is their first contact with the product/service. Efforts should be made, therefore, to catch and hold reader interest. It is for this reason that programs whose other materials are produced as economically as possible (typewritten and photocopied) will frequently develop promotional brochures that are typeset, printed on high-quality paper, and contain photographs or drawings.

A brochure should contain a brief description of the product or service, identify the audience for it, state its goals and objectives, and cite any special features that make it different from (and potentially superior to) similar products or services. The copy should be written in such a way that the name of the product/service and its logo, if one exists, are emphasized and will be remembered. It is important to display only the essential information about a product or service in a brochure, while ensuring thorough coverage. A well-written brochure is neither too abbreviated nor too verbose. Readers should be invited to request further information, and a contact name, address, and telephone number should be provided. Brochures sometimes contain a mail-back panel that the reader can tear off and return to request information and/or to respond to a short survey.

By virtue of being small, brochures, even fairly lavish ones, are relatively inexpensive to produce and can be extremely effective in promoting awareness of and interest in the product or service offered. A typewritten brochure can be prepared and photocopied in-house by project staff. Producing more "polished", professional-looking brochures will require that copy be submitted to media centers for typesetting, graphics, and printing. The relatively new office word processors, however, produce excellent copy at a fraction of the cost of typesetting. Media center staff can also assist with selections of paper, colors, typeface, and other needs. Remembering that a brochure often conveys the first impression of the project, it is well to consider spending extra money to achieve a polished product.

Newsletters. Newsletters promote awareness in at least two different ways. They serve to keep those familiar with a project's products and services apprised of new project activities and events; they also serve as a first-level awareness vehicle for those who are unfamiliar with project activities. The primary audience for newsletters is the former group -- those who can be expected to be interested in project activities and who constitute the

most likely clientele for new products or services available through the project.

Newsletter content may vary widely. A newsletter may include such things as notices of new products or services available, articles on the use of existing products and services, calendars of upcoming events, features concerning project personnel, letters to the editor, and other topics of general interest.

Newsletters can be produced in virtually any format, with the volume of information, frequency of publication, and available resources influencing the format selected. Like abstracts or brochures, a typewritten, photocopied newsletter with only simple drafting may be produced entirely by project staff. Professional assistance may be required if the newsletter is to have typeset headings, be completely typeset, or include photographs or other artwork. Almost any kind of paper is satisfactory, provided it is compatible with the printing process.

Manuals and Guides

Manuals and guides are ambitious products in terms of their size, development requirements, and intended uses. They are intended to provide full detail on the topic addressed, often in the form of step-by-step instructions accompanied by charts, matrices, and other displays. Whether these products are for teachers, administrators, trainers, students, or others, they have in common several features which should be kept in mind when deciding on a production format. They are relatively large, often more than 100 pages. They are high-use items which will be consulted frequently -- perhaps daily -- and thus they need to be sturdy and long lasting. As they are "working" documents, they usually are constructed so that they lay flat when opened. For these reasons, they are often printed on fairly heavy cover and text stock and are bound

with spiral wire. When using comb binding or a looseleaf notebook, the manual or guide will open flat; however, neither of these is as strong as spiral binding. The higher cost of spiral binding relative to these other methods is well worth the durability it offers for many of the kinds of products described later. Manuals or guides of 60 pages or less may be saddle-stitched and still open flat relatively easily. If materials are intended for moderate rather than frequent use, cheaper bindings --even staples -- will be adequate, but staples will make them much more difficult to use. Any manuals or guides which will undergo updates and revisions fairly often should be organized in a looseleaf binder for easy deletion and insertion of pages.

Many kinds of print materials fall within the categories of manuals and guides. These include curriculum packages, administrator's manuals, implementation guides, training manuals, parent guides, and community resource guides.

Curriculum Packages. Teachers, administrators, curriculum coordinators, and other school personnel use curriculum packages, which consist of the curriculum and instructional materials plus a teacher's guide. The developer should preface the contents of the curriculum with preliminary information which includes his or her rationale for the curriculum, the learner goals and objectives, a description of the type of learner for which the material is intended, the scope of the instructional materials, topics covered, and other relevant information. Multiunit programs may require a curriculum manual for each unit. Teacher and student materials are sometimes presented in the same curriculum manual and sometimes separately.

Teacher's guides have a strong "how-to" focus, as they are intended to assist teachers in implementing the program in the classroom. The teacher's guide may be a stand-alone product or be a part of the curriculum manual. The contents usually include a program overview and rationale, an outline of the program, sample materials and

lesson plans, procedures for conducting instruction, and suggestions for dealing with problems which might arise in delivering instruction.

Administrator's Manuals/Implementation Guides. These include detailed information on both program content and program management. In addition to detail on the philosophical grounding of the program and its instructional content, the administrator's manual should include the entire procedure for program implementation and monitoring. It should focus on budgeting, staff involvement, community relations, facilities requirements, documentation/evaluation/reporting responsibilities, and so on, as well as methods for integrating these concerns into a coherent program management system.

Training Manuals. Training manuals are of two types -- those for trainers and those for trainees. Materials for these two groups may be bound together in the same publication or separately. These materials are, in turn, often accompanied by supplementary (consumable) items such as handouts, worksheets, and survey forms. Trainers' manuals should contain step-by-step training activities and suggestions for conducting them, as well as all the materials which will be used during the course of the training. Preliminary information should include a broad overview of the program, the purpose of the manual, the rationale, goals, and objectives of the program, the teaching approach, and the scope and content of the program (Jones & Pantiel, Note 1).

Parent Guides. These are designed to acquaint parents with program goals and content and frequently, to involve them in program activities, either at home with their children or at school. The what-to-do and how-to-do-it sections of a parent guide should include step-by-step instructions, time requirements, discussions of common problems, and proposed strategies for dealing with those problems.

Community Resource Guides. Users of this type of guide are people whose function it is to foster positive relationships with the community in which a program will be operating. These guides cover such topics as identifying community resources and establishing working relationships between project staff and community groups who will be involved with the project in some way. Again, potential problems should be addressed and ways to deal with them suggested.

Reports

Documentation and evaluation reports are required of most federally funded projects, as they enable funding agencies and other relevant parties to know what activities are taking place or being planned and to what extent the project is successful in achieving its goals. It is recommended that documentation reports have the same set of headings and subheadings as the project's work statement (grant or contract), so that readers can easily determine what is taking place within each component of the project. Documentation reports should cover the project's activities and reference and/or attach materials which have been developed during the reporting period.

Evaluation reports are frequently the result of evaluation activities by someone outside the project; project self-evaluations are also commonly conducted. Evaluation reports contain different kinds of information depending on the kind of project, but typical inclusions are data on student outcomes, data on client satisfaction, survey instruments used, and the evaluation design. If the readership includes people who are not familiar with the terminology used by evaluators, efforts should be made to render the language of the report meaningful to these readers.

Documentation and evaluation reports should be prepared as inexpensively as possible --typewritten, photocopied, and bound with staples. More expensive, but necessary if the reports are too thick for even heavy-duty staples, is the use of comb, spiral, or velo binding.

Student Materials

Print materials for students are of two types -- consumable and nonconsumable. Consumable materials such as activity sheets, answer sheets, and tests may be prepared as camera-ready copy and provided to others for reproduction or they may be mass produced and made into gummed pads. Nonconsumable materials, like other high-use products, may be spiral bound, comb bound, or, if resources are available, cloth bound. Whether student materials should be typewritten or printed, whether they should be laminated or color coded, and how they should be bound, depend on the content and methods of the program. If the student is expected to use the product without direct and constant teacher direction, clear instructions must be included.

Instruments and Forms

Checklists, survey instruments, request forms, activity logs, and documentation forms are some of the kinds of small -- often one-page -- products that projects frequently develop and use. The various uses for forms and instruments are almost too numerous to list, but they include documentation, evaluation, recordkeeping, budgeting, contracting, surveying, planning, and many other functions. A typewritten, photocopied instrument or form is adequate for most purposes. Development of instruments and forms requires listing all the kinds of

information that the product is intended to record and then ordering these in a logical sequence for easy use by internal users or external respondents. In cases where the need for multiple copies of the instrument or form can be anticipated, use of NCR (no carbon required) paper might be considered. Forms or instruments of more than one page are generally stapled.

Product Planning, Development, and Production

Planning

Regardless of the kind of product you have chosen to develop, the planning and development process should be carried out with attention to some proven generic steps. Once the format has been decided, based upon audience needs and the product's purpose, it is time to identify personnel needs. Researchers, editors, typists, a printer, graphic artist, coordinator, or reviewer may be needed to complete the product as planned. Determine which needs can be met using in-house staff and which will require services secured from outside people or agencies. Identify the in-house people who will be involved and, if possible, convene them for an orientation of the product development effort.

Identify and list the tasks and subtasks which must be accomplished and estimate the time required for each. The Product Planning Form (Table 1) may be helpful in identifying and later tracking the various activities in the development process.

Gather time and cost estimates from any outside people or agencies who will be involved in the project. Add in the anticipated costs for telephone calls, materials and

TABLE 1

Product Planning Form

1. Product: What is it (report, form, brochure, packet, book, monograph, slide-tape, manual, etc.)?

   _____

2. Author(s) _____

3. Description of scope of work

   _____

   _____

4. Due date _____

5. Title _____

6. Purpose (intended use and intended outcomes from use)

   _____

7. Audience (primary & secondary) _____

   _____

8. Staff assignments

   a. Researching _____

   b. Writing _____

   c. Reviewing _____

   d. Typing _____

   e. Editing _____

9. Timeline for Production

   a. First draft to typist _____

   b. Edited draft to reviewer(s) _____

   c. Reviewed/edited draft to typist _____

   d. Camera-ready copy prepared _____

   e. Finished product due _____

10. Format

a. General description (e.g., will have four sections requiring tabbed dividers, etc.)

_____

_____

b. Approximate number of pages _____ c. Dimensions _____

d. Typesetting _____

e. Artwork _____

f. Stock _____

g. Binding _____

h. Other requirements _____

11. Contractual considerations/Agency Procedural Requirements

a. Copyright permissions/other clearances needed _____

_____

b. Copyright protection _____

_____

c. Agencies (other than originating agency) to be credited for development

_____

_____

d. Method of dissemination _____

_____

12. Information to be Gathered for Evaluation _____

_____

_____

_____

equipment, travel and other needs, then compute the overall cost estimate for developing the product. If time and cost estimates are realistic but beyond the available resources, do not imagine that it will be possible to cut corners along the way by working faster, hunting for a "bargain basement" printer, or the like. Instead, consider whether the content and format for the proposed product can be scaled down without violating the original purpose. Remember that a typewritten, photocopied product can be adequate for many purposes.

Development

At this point, you have established that you can afford to develop the proposed product. Staff assignments have been made; tasks and timelines have been delineated. Before actually beginning the development of the product, you should list all the materials to be included. Gather together those which already exist and describe briefly the new pieces to be developed. Assemble the raw material (notes, numerical data, research studies). Rework the list so that the items to be included are in a logical sequence and conform to the established "architecture" for the kind of product it is. Refining the original list, it becomes your outline. Without first developing an outline, you can be virtually certain to exclude important content, lose logical sequencing, and confuse or alienate the reader.

Working from the outline, begin to write the new material, noting where charts, graphs, and existing narrative will be inserted. Write clearly, avoiding the use of jargon, unexplained acronyms, and allusions to events, products, or people that might be unfamiliar to the audience. Seek to communicate enthusiasm for the subject, while at the same time maintaining a professional writing style. Dry, pedestrian writing will bore and alienate readers; adopting a style that is excessively

informal and "cute" will alienate them even faster. Well-placed touches of informality and humor, however, are welcomed by readers.

Authors should demonstrate a firm commitment to educational equity. They must be aware of discrimination of any kind and avoid it in their work. Publications cannot contain any bias in races, sexes, religion, age, and ethnic origin. Role description and occupations should be presented in nongender terms (e.g., "flight attendant" instead of "stewardess," or "firefighter" rather than "fireman"). Use plural pronouns whenever possible to avoid "he,", "she" or even "he/she" or "s/he" (see Table 2, A Checklist for Evaluating Materials for Sex Fairness). Illustrations of people, either photographs or drawings, should contain members of different races, sexes, and ethnic groups.

To ensure that your writing is clear, logical, complete, and appropriate, ask co-workers to review portions of the draft. A fresh perspective can provide useful input by noting content gaps, organizational problems, unclear statements, or other problems. It is extremely useful, if the budget permits, to hire an editor during the development process to handle the various technical aspects of the written materials, such as removing redundancies, correcting errors of language, adjusting text for parallel structure, ensuring that full citations for material quoted and otherwise referenced are provided and that the necessary permissions have been obtained and credits given, ensuring that the graphic displays do enhance and clarify the narrative, and so on.

Prospective users can critique your product and provide objective information on clarity and logical sequence of materials, ease of handling, user separation time, and other factors which should influence the revision process. Select sites and persons from representative audiences for whom your product is intended (e.g., urban, suburban, rural, teacher, aide, counselor) as your reviewers. Guidelines need to be established with these reviewers. It

TABLE 2

A Checklist for Evaluating Materials for Sex Fairness

- Is the generic he used to include both males and females when sex is unspecified (e.g., the carpenter...he...)?
- Is the generic she used where the antecedent is stereotypically female (e.g., the housekeeper... she...)?
- Is a universal male term used when the word is meant to include both sexes (e.g., mankind, forefathers)?
- When referring to both sexes, does the male term consistently precede the female (e.g., he and she, the boys and girls)?
- Are occupational titles used with -man as the suffix (e.g., chairman, businessman)?
- When a woman or man holds a nontraditional job, is there unnecessary focus on the person's sex (e.g., the woman doctor, the male nurse)?
- Are nonparallel terms used in referring to males and females (e.g., Dr. Jones and his secretary, Ellen; Senator Kennedy and Mrs. Ghandi)?
- Are the words "women" and "female" replaced by pejorative or demeaning synonyms (e.g., girls, fair sex, chicks, ladies)?
- Are women described in terms of their appearance or marital and family status while men are described in terms of accomplishments or titles (e.g., Senator Kennedy and Golda Meir, mother of two)?
- Are women presented as either dependent on, or subordinate to, men (e.g., John took his wife on a trip and let her play bingo)?
- Does a material use sex-fair language initially and then slip into the use of the generic he (e.g., A worker may have union dues deducted from his pay)?

is advisable to prepare a checklist or question/answer form which ensures that your reviewer will respond to the specific items on which you desire user feedback.

Another perspective may be utilized in the review of your product: the "expert" reviewer. This person is a specialist in the particular type of product you have developed, and can provide information on competitive products, design, format, and other features. Again, a checklist or other form is helpful in the review process.

During the development of a product, you may wish to incorporate published, copyrighted materials. In addition, depending upon the rules and regulations governing your grants or contracts, you may wish to copyright or otherwise protect your product, whether it is in draft or final form. You will also need to consider whether the inclusion of a disclaimer or statements of assurance is required for the product, under the guidelines of the funding agency and/or developing institution. The following section provides information on these various items, which must all be considered during product development.

Permissions. Permissions or copyright releases should be obtained early in the process of development. To use photographs, lengthy quotes, charts, graphs, or sections from copyrighted sources, obtaining a signed release is necessary. Brief quotations require citing the author, work, and page on which the quote appears. It is the author's responsibility to obtain permission to reprint any material -- prose, poetry, lines from song lyrics, charts, photographs, maps, or other illustrative material --from the original copyright holder. As a professional courtesy, most publishers and authors will freely grant permission at no charge for educational use; however, some will charge a fee. Care should be taken to credit the reprinted material exactly as the copyright holder specifies. When in doubt, always obtain permission. Permission must also be obtained to use noncopyrighted photographs of persons, even if they are in the project,

and especially if they are children in the program (see Table 3, for suggested form).

Copyrights. In the past, the United States had a dual system for copyrighting work. Common law protected unpublished work; federal statute protected work after publication. Since January 1, 1978, however, the revised copyright law automatically protects a work when it is "created" or "fixed." These two terms refer to a work appearing in copy for the first time. Under the new law, the author is granted a five-year period of protection before registration in the Register of Copyrights is required. Although the new law does not require copyright notice as a condition for protection, it is still recommended that a legend appear on materials which qualify for copyright.

In November 1980, Congress passed the Computer Copyright Act of 1980 as a part of a bill that amends future patent laws. The bill defines a computer program as a "set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." The individual program instructions are protected from unauthorized copying, but not the algorithms on which the program is based. This is because ideas are not protected by copyright, only the embodiment of ideas.

The following statement is standard and should appear on the back of the title page of copyrighted printed materials:

> Copyright (year) by (name), (city and state).
> All Rights Reserved.

Materials which have not been copyrighted, but the use of which is to be restricted during pilot or developmental states, or for possible future copyright, should include the statement:

TABLE 3

Talent Release Form

In consideration of my appearing in one or more of the publications or programs which the _____ is preparing or may in future prepare, I hereby authorize _____ to use and to record, on film, tape, or otherwise, my name, likeness and performance in such publications or programs and to authorize others to use such recordings or films for educational or commercial audiovisual purposes and for general educational purposes in perpetuity. _____ may use my name, likeness, and biography for publicizing and promoting such publications or programs.

I also warrant and represent that all material furnished and used by me in any of such publications and programs is my own original material or material which I have full authority to use for such purposes.

SIGNED _____

ADDRESS _____

_____

DATE

Copy Given to Signer _____
(initial)

If contributor is a minor, parent or guardian must sign here, indicating consent:

_____

_____

> This work has not been published and is afforded all protections under the United States Copyright Law (PL 94-553), effective January 1, 1978. No part of this work may be reproduced, stored in a retrieval system, or transcribed in any form or by any means, electronic, mechanical or photocopying, recording or otherwise, without the prior written permission of the author/agency identified below.

If you do not desire to restrict use of reproduction of your materials, include the statement:

> These materials are in the public domain and may be reproduced without permission. The following acknowledgment is requested as a professional courtesy, on materials which are reproduced: "Developed by (name), (city and state)."

Table 4 provides an example of a format for securing permission to use copyrighted print materials.

Because of the various specific regulations concerning publishing and copyrighting materials developed with grant or contract monies, developers must clear all such materials with the Copyright Administrator, U.S. Education Department.

Disclaimers. Depending upon the funding agency, disclaimers are mandatory or desireable in order to protect the developer or funding agency. Contracts and grants may require that a specific statement be printed on all materials developed and produced as a part of the scope of work. The statement will differ from contract to contract, and the exact wording is often specified by the funding agency.

TABLE 4
Permission Request

Permission Department
(Mailing Address)

_____

_____

_____

Return the Request to:

_____

_____

_____

I am preparing a manuscript for a book entitled

_____

to be published by _____

__(Number) copies are expected to be 1) distributed at cost or free, 2) sold for profit.

I would greatly appreciate your permission to use the following material from:

Title: _____
Author: _____
Publication date: _____
Number of words: _____
Number of tables: _____ On pages numbered: _____
Number of illustrations: _____ On pages numbered: _____
Opening words: _____
Closing words: _____
Market: In all languages and throughout the world.

Proposed credit line: _____

_____

Reprinted with permission.

Date: _____ Signed: _____

We hereby grant permission for use of the above-mentioned material.

Date: _____ Signed: _____

If proposed credit line is inadequate, please specify requirements:

_____

TWO SIGNED COPIES OF THIS REQUEST ARE ENCLOSED: THE DUPLICATE IS FOR YOUR RECORDS.

The following disclaimer is commonly used by federally funded projects:

> The information presented in this publication does not necessarily reflect the views or opinions of the (funding agency) and no official endorsement should be inferred.

A more formal disclaimer for published works could be:

> Produced by the _____, a private, nonprofit corporation, all rights reserved. The project presented herein was performed pursuant to Grant/Contract No., U.S. Education Department. However, the opinions expressed herein do not necessarily reflect the position or policy of that agency, and no official endorsement by the NIE/USED should be inferred.

Statement of Assurance. The following statements are optional, depending on the guidelines of the funding agency or requirements of your own group or institution. This statement is usually placed on the reverse side of the title page:

> It is the policy of (agency or institution) that no person be subjected to discrimination on the basis of race, national origin, religion, sex, age, handicap, or marital status in any program, service or activity for which _____ is responsible.
>
> _____ will comply with the requirements of state and federal laws concerning nondiscrimination and will strive by its actions to enhance the dignity and worth of all persons.

Some institutions and agencies require a more succinct statement to appear on all publications, such as:

(name) is an equal opportunity employer.

or

(name) is an equal opportunity, affirmative action institution.

Production

After the draft product has been reviewed internally and externally, changes have been incorporated, and final editing (preferably by someone other than the author) has taken place, the product is ready for typing and/or typesetting and printing. Sometimes decisions about printing and binding are not made until this point in the process. At other times, earlier decisions are changed at this point based on recommendations by reviewers, disappointment (or delight) about remaining financial resources, or other factors. In any case, the format decision made will determine what next steps to take.

If the product is to be typewritten and produced in-house, the process is relatively straightforward. The product is typed according to predetermined specifications for spacing, type styles, headlines, and other format specifications. Content proofing (line by line comparison with the draft to ensure that nothing has been omitted and proofreading (for typographical errors) take place, followed by layout and paste-up of headings, pictures, charts, and so on. At this point be certain to give the product a final review to make certain that everything is there in proper sequence. After photocopying, check a few copies at random for completeness, quality of reproduction, straightness on the page, and so on.

Another option which will save money, but which will require concentrated work and some technical expertise, is to prepare the camera-ready copy in-house, then send it

to a printer for printing and binding. Camera-ready copy is really nothing more than clean sheets of text, complete with headings and graphics, ready for the printer to photograph. Camera-ready sheets are called mechanicals, and they are used in both multilith and offset printing processes.

Multilith, or itek, is the cheapest form of printing. In this process, mechanicals are photographed and transferred to a disposable plate. The plate is used in the press to reproduce the original copy onto sheets which will be collated and bound together as a final publication. Offset printing, a more expensive but cleaner and sharper contrast method of reproducing mechanicals, involves creating a metal plate from the photograph of the mechanical. When the plate is inserted in the press, it rotates on a cylinder, and the ink from the plate is transferred to a rubber blanket, which in turn transfers the ink to the paper. The sheets of paper are then folded together and collated.

While multilith is less expensive than offset and is of much better quality than photocopy, it does impose certain restrictions. Only 8-1/2" x 11" or 8-1/2" x 14" sheets may be run on multilith; furthermore, because a single sheet is printed one side at a time in multilith, the binding options are limited to staple, perfect bind, velo or grommet. With offset printing, pages of any size may be run, and any binding appropriate to the number of pages and the use of the document may be accommodated.

In the multilith process, once the printer receives the mechanicals, the developer has only to wait for the final product. The only further check or revision possible is the inspection of a collated copy prior to the document's binding. Therefore, when using a multilith process, the developer must make certain that all mechanicals are correct, clean, and in the right order.

When using offset printing, the developer does have a final check after sending the mechanicals to the printer.

Once the mechanicals have been photographed and the plates have been set, the printer will send a blueline proof for review. The blueline is a cover-to-cover reproduction on photosensitive paper of the copy as it appears on the plates. The bluelines must be proofread carefully and checked for crooked headings, upsidedown pages, pages out of order, typographical errors, and other gross and fine features. The blueline is the last opportunity for making corrections before the final product is run off the press. Although making corrections at this stage is expensive (approximately $8.00 to $15.00 per page, depending upon the problem), it is better to catch an error here than to wait until the final copies are delivered at the door.

Use of Photographs and Color. Black and white photographs, called halftones, and color photographs increase the cost of production, but may be necessary to illustrate important points, to enhance descriptions, or to meet the demands of the audience, particularly when similar products, against which the new product may compete, contain photographs. It is best to consult with the printer about preparing the mechanicals for photographs. Numerous graphic production books explain fully the process and technique for preparing photographs for printing. Usually, marking the place in the text where the photographs are to go, numbering the photographs, and numbering the space where the photographs will go should be sufficient for most printers, who will then prepare the photograph and page mechanicals themselves. To reduce costs futher, however, it is possible to prepare the mechanicals in-house. The printer can advise you of the method, but it is time-consuming and requires precision. Because a slight mistake can result in shadows, white gutters, or worse around the photograph, it is best to leave photo reproduction up to an experienced layout artist. The extra cost will likely be beneficial.

One word about color photographs in a publication: they are expensive. The minimum cost for running color photographs is probably $300 per 1,000 copies above what

it would cost for halftones. Thus, use color only when absolutely necessary; otherwise use halftones or line drawings.

Distribution

Your finished product is now in your hands and you are ready to disseminate it. You have probably done some planning for the dissemination of your product prior to this time and have decided on at least some of the avenues you wish to use. Your dissemination strategy will depend on the kind of product you have developed and the kind of project or agency you are. Awareness materials are generally relatively small products and, because of their purpose, are usually provided free -- through the mail, at conferences and workshops, or through established networks. Instructional materials which will be used by adopters of your program will generally be presented to the adopting group with orientation and often training activities.

While the decision to have a product published and marketed commercially is sometimes made before or during product development, it is more common for this decision to take place after materials have been developed, used, and proven successful enough to warrant commercial distribution. Products which were originally prepared on the typewriter, reproduced on a photocopy machine, and bound with staples or spiral wire may then be "redeveloped" -- not in terms of their content (though additional promotional materials may be developed)--but in terms of the printing and binding processes used. They may be made "prettier," in a word, for commercial distribution.

Going commercial is a major decision and should not be undertaken without considering some major drawbacks. Commercially produced materials will cost more. Because higher costs reduce the number of people able to buy and use your product, and because you now have a "middleman," you might well share the experience of many federally funded projects -- namely, that royalties on the product(s) do not significantly increase resources, but are, in fact quite modest. Competition with other products, too, may reduce the likelihood that your product(s) will be widely sold and used. Remember, too, that promotional materials developed by a commercial firm to generate interest in the product are, under some arrangements, beyond the control of the developer. Some developers have experienced dissatisfaction with the accuracy of commerically developed promotional materials and/or with the image conferred by them.

It is also possible, of course, to handle marketing and distribution of your product in-house. If your project is housed within an agency that has central business office procedures and marketing processes established to distribute products, this may be an appropriate and efficient distribution mechanism. If your agency or project has no such mechanism, you are likely to find that setting up a marketing operation is costly and time-consuming beyond any benefits it produces. Depending on the funding agency, grants and contracts may have a government-sponsored marketing agency available to them, which can assume a liaison role between a developer and a commercial publisher.

Taking a print product from idea to reality is a challenging task, requiring the developer to analyze the purpose, audience, and need for the product, organize and budget resources, and make the best format selection for the intended use of the product.

Selecting and using an appropriate, workable method for marketing and distribution will help to ensure that the efforts you have expended in developing and producing

your product can now come to fruition. Your original good idea has now become tangible and ready for travel.

Several of the references proved especially useful in the development of this chapter. Two works, in particular, should be credited: Guidelines for Writing and Printing Manuals: A Resource Manual for Project Directors and Staff by Lillian White-Stevens (Princeton: Educational Improvement Center-Central), April 1979; and Guide to Packaging your Educational Program by Janice M. Hunt, Mary T. Johnson and David C. Degener (San Francisco: Far West Laboratory), 1980.

Glossary

Bindings

Punched Looseleaf. Two- or three-hole punched paper may be shrink-wrapped or fastened with metal or plastic posts. The looseleaf format is inexpensive to produce and is appropriate for materials which require frequent updating, additions or deletions (e.g., an agency's procedures manual).

Saddle-Wire Stitching (or Stapling). In this process, a stitch or staple binds the leaves of a book or pamphlet on top of the fold lines. This method is inexpensive and practical for products which are not too thick, for example, monographs, small catalogs, reports. A stapler long enough to reach to the binding point at the center of the product is required.

Side-Wire Stitching (or Stapling). A stitch used in sewing together the leaves of a book or pamphlet on top of the fold lines constitutes this process. This method is inexpensive and commonly used for small reports and other materials. An ordinary or heavy duty stapler is required.

Velo. Two separate, solid plastic bars, front and back (nonspiral), grip specially punched paper in this type of binding. This is an inexpensive and professional looking binding used for both small and large products. Media centers are usually equipped with velo bars and machinery for the special paper punching required. Velo binding is "tight" and is inadvisable if users will want the product to lay flat.

Plastic Comb. This comb binding consists of cut plastic binding (one piece) used with specially punched paper. Comb binding allows products to lay open flat. It is more

expensive than the methods described above and requires media center capabilities for punching and assembly.

Spiral Wire. In spiral binding, a cylindrical spiral of wire or plastic is passed through a row of punched holes at the edge of the paper. Spiral wire binding allows products to lay flat. It is often used for large documents (e.g., teacher's manuals). This method is relatively expensive, but very durable, and is recommended for high-use products.

Perfect. This binding process consists of trimming the folds at the back of the book and applying an adhesive to hold the pages together. This is essentially the same method used to make pads. Used in large press runs, perfect binding is done by professional publishing houses, and because many copies are produced, the per copy cost is relatively small.

Cloth Back Binding. Also called hard back or case binding, this method encloses the content pages within a rigid cover. This type of binding is very durable and is used for large printings of high-use products (e.g., textbooks, library books).

Major Printing Processes

Photocopying. Photocopying is ideal for small runs and for materials which need not have a highly polished appearance. Photocopying is a photographic -- as opposed to a printing --process and works best with positive proofs and other reflective copy (not transparent or translucent). Photocopying materials originally printed or photocopied on colored paper will reproduce gray; white paper originals should be used.

Offset Lithography. In this process, an inked impression from a plate is first made on a rubber-blanketed cylinder and then transferred to the paper being printed. Offset printing is relatively inexpensive, confers a sharper appearance than photocopying, and prints on a wide variety of surfaces. For larger press runs, offset printing is less expensive than photocopying. Only finalized products should be printed offset, as changes in the copy require making new plates.

Letterpress. Letterpress printing is more expensive and produces a more consistent-quality product than offset. Basically, the letterpress involves the transfer of ink from a raised surface (type or plates) to the paper of any thickness. While letterpress printing confers a very professional appearance, it does not produce halftones as easily as does offset.

Gravure. Of the three major printing methods, gravure is the most complex and the most expensive. It is generally used only for expensive, illustrated materials or for very large runs. The widest range of tones is produced by the gravure and the process is compatible with a wide variety of surfaces.

Other printing processes exist (duplicator, silk screen, collotype), but these are unlikely to be the chosen methods for producing educational products.

Resources

Reference materials and consultant assistance for developing print products are available from many sources. Content-area specialists may be accessed through state departments of education and, in many states, through intermediate agencies operating at the county level. Resources and information are also available through local universities, libraries, and teacher centers. NDN projects can receive help from their NDN State Facilitator. The USOE Regional Offices are another good source of information, as are the NIE Regional Exchange projects (see Resources in nonprint chapter).

A central file of national, regional, state, and local agencies which can provide materials and assistance is maintained by the Resource and Referral Service (RRS). Projects contacting RRS for help will receive a "package" containing the name, address, telephone number, and contact person's name for the various agencies which can provide assistance with the content and development process for the educational materials you wish to produce.

Resource and Referral Service
The National Center for Research in
Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210
(800) 848-4815 or (614) 486-3655

The reference materials cited in the bibliography section may also assist product developers.

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The Nonprint Product: Design, Development, and Production

Judith Mann
Ann Murphy

Today's media present opportunities for developing nonprint educational products which can convey information effectively for a variety of purposes and audiences. Careful analysis of the intended purpose and audience in order to ensure use of the most appropriate mode of presentation, and rigorous attention to development and production processes are essential. Audiences have become quite sophisticated as viewers of media products; therefore, an inappropriate, poorly designed or imperfectly executed product will distract and disfavor an audience, and the message, however valid, will be lost through audience inattention.

Some forms of nonprint media products can be produced successfully by developers themselves; others should be produced either by or under the direction of experienced media professionals. Developer energy, in all cases, should

be directed toward planning, establishing and clarifying objectives, budgeting, identifying media audiences, establishing schedules and deadlines, preparing the script, and selecting appropriate professional services. The guidelines presented in this chapter are intended to assist developers in designing and developing quality nonprint products and in making production decisions. Information about working with media professionals is also included. A glossary of terms is included, not only to define various terms as they appear in the text, but also to provide information by which a developer may become more conversant with an audio-visual professional.

Designing A Nonprint Product

Let's assume that a decision has been made to produce a nonprint, or audio-visual, product. What steps must be taken to ensure the optimum success for the production and dissemination of the material? Crucial to any project are the initial planning stages wherein a clear objective is identified, a target audience decided upon, coherent ideas for the design formulated, and a budget and timeline established. It is essential to plan all stages with all personnel in advance. Every dollar spent in planning will save from $100 to $1,000 later, if changes are required during final stages (Humphrey, Note 1). During the initial planning stages, it is advisable to keep the choice of a format open as long as possible.

Basic decisions underlying the design and development of a nonprint product parallel those for development of a print product: 1) the target audience (the user) should be established and the characteristics and needs of that group identified; 2) the purpose of the product must be clarified; and 3) the need for the product should be analyzed. If the intended purpose of a product is

adequately addressed by an already existing product or via other resources, project efforts might best be utilized differently.

Once the audience and purpose have been identified, the statement which delineates these becomes the objective; for example, This product is designed to help developers of educational materials understand the process of developing an audio tape. Easiest to produce effectively are products fulfilling one clear objective. Products with muddled, counterproductive objectives or with no particular objective at all are generally destined for failure. Decisions about the objective of the product to be developed must therefore be given a great deal of attention; once objectives are established, adherence is critical.

Choosing A Media Format

When objectives, timelines, and budget constraints have been considered, selection of the specific format begins. Selecting a format refers to chosing the way in which the materials will be presented. For example, you may choose to present your materials as a manual, a slide tape, or a set of activities; these are formats. The process of selection involves considering the following questions.

1. **What kind of information is to be addressed?** Examples of information categories include factual information, visual identifications, principles, concepts, or rules, procedures or operations, perceptual motor acts, or attitudes, opinions, or motivation.

2. **How is the content classified?** Decisions must be made on the following questions: Is the recognition or recall of specific sounds an objective? Is the recall or recognition of a three-dimensional object required? Is the understanding of two-dimensional spatial relationships an objective? Is recognition or analysis of a procedure an objective?

3. **Is the potential format appropriate to the stated objective?** To answer this requires an analysis of the attributes of the medium, a subject that will be presented in the next section.

4. **Does your objective require the use of sound and/or motion?** Do voices need to be reproduced? Is a display of motion necessary to demonstrate a skill, model performance, or provide feedback?

5. **Should your production be in color?** Black and white productions are less expensive than color. Color, however, usually increases interest, realism, and communication effectiveness (Brown, Lewis, & Harcleroad, 1977).

6. **Does the sophistication of the format fit the audience?** Is the vocabulary used correct for the target audience? Is the subject matter of interest to the audience? Is information presented at the correct rate for learning?

7. **Does the existing budget allow for the production of this format?** Does the budget provide for materials, time, consultants, production, duplication, and professional audio-visual assistance?

8. **In what environment will the product be used?** Examples include classes of more than 30 students, regular sized classes, small groups, independent studies, conference presentations, broadcast studios, and so on. Mattas (Note 2) recommends that presentation for groups numbering six or less can be oral; for groups of 6-15, materials supplementary to the oral presentation should be distributed; for groups of 15-30, slide-tape presentations are effective; and for groups larger than 30, films are excellent.

9. **Does the intended user have the budget to buy the product?** The developer may have an excellent, professional quality videotape, but if the school district (for example) can't afford it, the developer has lost his or her market.

10. **Is the equipment required for this format easily accessible to the potential users?** Commonly used equipment requirements enhance the likelihood of wide usage. Elementary schools do not usually have video equipment, for example.

11. **Can the user operate required equipment?** A bank of four projectors with a dissolve unit may work extremely well for the developer's in-house use, but will not be used by a classroom teacher or aide because of its complexity. Remember the potential user.

Production: In-House or Professional?

Once the media format is chosen, developers must decide whether to produce the product in-house or to work with media professionals. There are several formats that can be produced successfully in-house if staff members have some background in the media, even as a hobby. These formats are silent slide show, sound slide show with a simple narrative tape, silent filmstrip with accompanying script, filmstrip with simple narrative sound, and simple narrative audio tapes. Media formats other than these require professional equipment and expertise.

If staff research is necessary for the project, all information and resources should be gathered or identified before preparing the script. All tasks and subtasks which must be accomplished by staff should be identified and the time scheduled for each established. A time schedule should be agreed upon with the media professional, if one is involved, in which major activities are correlated and components and resources identified. A written chart or schedule should be prepared so that all steps and responsibilities are clear. This schedule should serve as a reference point for all involved in production, particularly at critical time overlaps where the outcome of one function depends on the outcome of another. Responsibilities should be delegated clearly, with each person involved knowing exactly what is expected.

When media professionals are involved in the project, initial planning meetings should include them. Generally, these meetings consist of three stages -- defining what is wanted, considering what is possible, and mutually deciding upon what is to be done. In working with media professionals, confidence in their expertise and trust in their creative and production decisions should be established early in the working relationship. Before choosing a professional, review some of his or her previous works for effectiveness and compatibility of

style with the goals of the intended product. These should not become issues once work with the professional has begun -- a match should be ensured before development begins.

Other criteria should be considered in choosing a media producer. Because the producer is the keystone of the production unit, it is essential that he or she have a sound working knowledge of both the media chosen and of the material that will be translated into the medium. The latter can come from staff research and communication. The potential producer should display the following characteristics: intelligence and a capacity for quick thought and action; a talent for forming positive working relationships; a talent for organization and follow-through; a sense of commitment; imaginative flair; a sense of aural and visual potential; and a realistic, budget-oriented approach to production. A decision to hire a producer solely on the basis of a low bid is courting disaster. If costs of production appear to exceed budget limitations, consider whether the content or format of the proposed product can be scaled down and still achieve the original purpose.

Script Preparation

The next step in the design and development process is developing the script. A script is a written description of the visual images and the sound which accompanies them. The sequence of events is usually numbered, and the cumulative time elapsed indicated (Ely, 1980).

The first step in script preparation is writing the script outline. The script outline can be prepared collaboratively by project staff and the producer, or it can be prepared by the producer according to the objectives established. A

careful outline enhances the quality of the script, for it removes the danger of a vague and wandering style. The outline should not be perceived, however, as an ironclad contract. It is a tool for guiding effective script development.

The completed script outline provides the structure for the script itself, which should include (Ely, 1980):

1. An appropriate introduction with a statement of purpose;

2. Clear transitional narrative and visual statements within the material;

3. Arrangement and juxtaposition of each event in an effective manner;

4. Adequate emphasis of important points;

5. Vocabulary level which is appropriate to the comprehension level of the target audience;

6. Explanation of technical terms and abbreviations when necessary to enable viewer understanding;

7. Proper nomenclature for the tools and equipment used;

8. Complete and accurate reference to related materials;

9. Technically accurate information with a minimum of irrelevant and disruptive information;

10. Rate of presentation (pacing) and length which is appropriate to the target audience and the complexity of the subject matter; and

11. Generation and maintenance of viewer interest. (p. 18)

To help organize script production, it may be convenient to use a storyboard of your production. A storyboard provides "a visual display of illustrations and written narration arranged in appropriate sequence. Instruction to the photographer, artist, narrator, and/or audio engineer are usually included" (Ely, 1980, p. 16). To prepare the storyboard simply write down on separate cards the details of each visual you intend to use, the scene number, treatment of shot (closeup, etc.), directions for production personnel (director, photographer, etc.), and narration, dialogue, and sound effects to accompany each visual (Brown et al., 1977).

An actual production script which contains every element of production can be difficult to read. The developer may wish to suggest to the producer that the drafts and final scripts presented for review and approval be abbreviated. It may be necessary to meet several times for revisions and additions before the script is satisfactory.

After determining that the script does follow the outline faithfully and meets the stated objectives, great care should be given to analyzing whether the script can actually be produced. Ideally, this analysis should be done by someone who knows exactly what a camera can or cannot photograph or what a tape recorder can or cannot record. If the script has been written by someone knowledgeable in the content matter, but not in audio-visual translation, it is essential that production feasibility be analyzed by an experienced producer.

If guidelines for development and script preparation are followed carefully, the final product should meet stated objectives and intentions. Changes for most media formats are difficult and/or costly to make once the product is completed. It is possible to change a slide in a slide-tape presentation, or to insert or edit out a portion of a simple audio tape, but changes in edited video tapes,

filmstrips, films, or sophisticated audio tapes and slide-tape shows involve complex processes. It is for this reason that time and attention to initial planning and careful script development have been emphasized.

Media Formats

The following discussion of major media formats is divided into: Slides and Slide-Tape Presentations, Filmstrips, Films, Audio Tapes, Video, Videodisc, and Television. The discussion of each of these formats includes information on equipment, expertise needed, relative costs, advantages and constraints, and other factors which should be considered in format selection.

Slides and Slide-Tape Presentations

If the developer decides that neither motion nor sound is required for his or her product, slides alone will probably serve the purpose. If motion is not required, but sound is needed, a slide tape may be the best choice.

Slides are used in a 35mm format (2" x 2" slide mount). Within a set, all slides should be this size and should be horizontal (Ely, 1980). Ely recommends the following guidelines in preparing slide presentations:

1. Use color film for all slides.

2. Limit each slide to one main idea.

3. Use progressive disclosure (building up an idea point-by-point using additional information in

each successive slide until the visual is complete).

4. Limit each slide to 15-20 words and include no more than will be discussed.

5. Leave space between lines (at least the size of a capital letter).

6. Use several simple slides rather than one complex slide.

7. Use duplicate slides to refer to the same idea at different points in the presentation.

8. Base the minimum artwork letter size on the maximum viewing distance. The minimum height for all letters, words, or phrases which will appear in the final art should be in the ratio of 1:50 of letter height to height of final projected area. The minimum lower case letter height should be 1/8" on 6" x 9" artwork, but 1/4" would be better.

9. Services should include all labor and materials necessary for the development of artwork sutable for reproduction of 2 x 2-inch slide transparencies utilizing a 3 x 4 inch aspect ratio with all critical information contained within the standard TV "safe area" for the visual material. The "safe area" is a space smaller than the TV picture tube which is sure to be seen on a commercial TV receiver. In other words, the extreme edges of almost any graphic material will probably not be seen on the receiver and all art work for TV must take this factor into account.

10. Number slide mounts in order of their appearance. The slide sequence number should appear on each slide mount along the upper

edge (to be viewed by the projectionist), when the slide is inserted into a slide tray for projection.

11. Mount slides in 35mm double frame, plain thin cardboard mounts. The mounts should provide for positive locking to prevent them from coming apart during handling, shipping, and/or storage. (p. 25)

Slides offer the advantage of being readily reorganized in order to accommodate the preferred sequence of visuals. The sequence may be easily edited or updated. Slides are somewhat less durable than either films or filmstrips because of the frequent individual handling that is required for their use and because they are susceptible to dampness. As long as a slide carousel with a locking ring is used, the potential for disorganization and individual picture loss is minimized. Slides must be handled carefully. The developer should have a duplicate set to work with, and keep the master set untouched. One fingerprint can ruin an original.

Producing a slide presentation always requires a script, regardless of whether it is to be a silent or sound presentation. The script must give a clear indication of what slides are to be taken, and in what order they are to be presented. A slide show produced without this tight structure stands a great chance of not getting its message across in clear terms. A silent, one-projector slide show is the simplest kind and can reasonably be developed in-house, provided there is a competent photographer available and, as stated, a clear, organized script from which to work. When working in a silent mode, clear graphics might be incorporated into the slides. Laboratories are now equipped to produce excellent slides from flat artwork, and generally offer free technical advice. The slides for a one-projector show can be advanced manually or by an inaudible electronic signal (1,000 Hz tone) recorded on one track of a cassette. This signal (also called "beep" or "pulse") can be handled by

developers with the correct equipment. If a slide presentation with sound is to be produced, professional execution of the sound track should be considered. Anything short of a simple narrative is difficult to produce due to mixing considerations, levels of recordings, and complex editing.

Development of a multiple image slide presentation for two or more projectors is best left to the expertise of audio-visual professionals. Precise timing is required when working with multiple, fast-paced images, and often a computerized system is needed. Multiple image presentations require additional devices beyond the projectors; these include encoders to produce synchronizing signals, dissolve or fader units, and programmers. It should be noted that slide products accepted for commercial publication will probably be distributed as filmstrips, which are far less expensive to reproduce.

Costs. For a simple, in-house presentation with a straight cassette narrative, the costs may not go beyond the cost of film, processing, and the cassette. Film stock and processing costs should be figured on a shooting ratio of at least four times the number of images shot to the number of images actually used in the production. Calculate backwards from the number of images indicated in the production script to establish this figure. The cost for a professionally prepared slide show generally averages between $400 to $500 per running minute.

Audio Tape

An audio tape is typically used to accompany slide presentations. Occasionally, however, there may be a need for only audio materials. It is not necessary to go to a professional studio to produce a simple, quality recording, but care and attention are required. In making

a tape recording, there is no substitute for a complete working knowledge of the tape recorder that is being used, its capabilities and limitations.

An open reel (reel-to-reel) system should be used when producing edited tapes. With this system (preferably a four-track deck), the tape is accessible for splicing, and the faster speeds and large surface areas permit precise and accurate work.

When recording, several elements come into play:

1. The recording speed relates to frequency response and quality. As a rule of thumb, use the slowest acceptable speed for an intended purpose, generally either 3-3/4 inches per second (ips) or 7-1/2 ips.

2. The use of a properly adjusted VU meter gives an accurate measurement of relative sound strengths and permits production of recordings that are dynamically acceptable.

3. When working with microphones, it is important to consider the choice of microphone relative to what is to be recorded, the placement of the mike(s), and the acoustics of the room.

4. It is important to use high quality tape with characteristics appropriate for the intended application.

5. Copyrighted music and/or sound effects cannot be used. Consult a studio or other library for "cleared" music and sound effects.

6. The use of multiple voices on an audio tape is recommended, for only one voice throughout can become quite boring. Remember to use voices without regional accents.

Cassette tape recorders should be considered when edited tapes are not a goal or when audio-visual application is intended. Cassettes have been improved to the point where they now nearly rival the open-reel machine in sound quality, and they certainly have the advantage of being more portable. Top-of-the-line cassette recorders are equipped with VU meters for monitoring the sound levels and provide complete mono/stereo compatability from machine to machine. Tape cassettes are available in lengths denoted by their total playing time. They range from a total playing time of 30 minutes (C-30) to 120 minutes (C-120). Cassettes that play longer than 90 minutes total are ultrathin and delicate, and should be used for special purposes only. For more complex recordings, with mixed tracks of sound effects, music, and narration, it becomes necessary to work with a sound engineer and/or a sound studio.

Costs. The range of costs is considerable, based upon the complexity of the tape to be generated. If a simple tape is required, the costs might only be the price of the cassette or reel, which would amount to only a few dollars. If the services of a sound studio are required, you can estimate on at least a $35 per hour charge, with prices spiraling when working with major studios. Additional costs are added if professional voices, music, and sound effects are used.

Filmstrips

The filmstrip is a series of still pictures on a strip of single-frame 35mm film. As with slides, artwork and photographs must be positioned horizontally. At one time it was necessary to photograph for filmstrips on a special half-frame camera, but now it is possible to use a standard 35mm camera and have the images transferred to an internegative by a photographic laboratory. This makes it feasible to produce filmstrips with no sound or

with simple sound, provided that a capable photographer and graphic artist are available and that objectives and script are clear. The material should be tested in a slide format, however, before it is transferred to filmstrip format (Ely, 1980).

Filmstrips can be silent (with captions incorporated) or can be accompanied by a sound program on tape or record. If used, captions should be limited to two lines (Ely, 1980), and should be nontechnical. Remember that because the words will appear white, the bottom portion of the slide should be dark. Filmstrips can be advanced manually, by an audible signal that is laid down on the audio track, or automatically, by an inaudible signal that advances the strip.

There are a number of good reasons for choosing filmstrips as a format, particularly if motion is not necessary. They are an excellent means of illustrating concepts and of tying words to visuals of objects. They are best used for a single concept or task, but the application range is enormous, spanning a wide variety of instructional levels, from primary grades to adult education. Filmstrips are especially suited to individual pacing, as the strip can be run backwards and forwards, as needed, and held on a frame for as long as necessary. Active participation with the incorporation of discussion or testing questions is feasible. Information can be condensed on filmstrips; hence, they offer an excellent medium for supplementing and reinforcing learning from other experiences and for consolidating and reviewing learning. Large or small groups, or individuals, can view filmstrips easily. The equipment required for filmstrip projection is usually relatively inexpensive and accessible. It should be noted, however, that, unlike slide shows, filmstrips cannot be updated.

Costs. Filmstrips have become visually sophisticated over the last few years, so that to produce a competitive filmstrip may mean a large investment in special effects

and graphics. When producing a filmstrip with professional production, music, and narrator, the developer should estimate approximately $400 to $500 per minute, plus the cost of internegative preparation ($400 to $500). Special effects, graphics, or optics will increase the cost considerably. The industry standard is $1,000 per running minute. From the user's standpoint, filmstrips are economical -- they are less expensive to buy than the same material in book form with the same number of color photographs, and they are also less expensive than sets of slides (Brown et al., 1977).

Film

Traditionally, film rests on a four-part foundation: script, direction, camera, and editing. Once the script is prepared, the film becomes a collaborative effort, undergoing many reworkings by people other than the script writer(s), namely the director, the camera person(s) and the editor(s). For these reasons the developer must be extremely patient and willing to make a sizeable economic investment for a film project. Filmmaking involves the following stages: 1) shooting scenes with a 16mm or 8mm camera (only major commercial studios can afford 35mm film production); 2) processing film and producing a work print; 3) editing a work print and laying down sound tracks; 4) dubbing, which is producing a composite sound track; and 5) producing a final print.

There are advantages to choosing a film format, especially if the developer plans wide-scale distribution for the product. It is suitable for transmission on broadcast television, if the proper persons can be contacted and persuaded to use the product. It is a flexible medium that can be used exactly as and when it is required. It can teach anything related to motion, present and illustrate real life situations, and broaden understanding well beyond a person's own experiences.

The main disadvantage of film is economic, with production costs continually rising. One option, if film is being considered, is the use of special 8mm film (Super 8). Super 8 provides a form of film less expensive, easy-to-use; because it is contained in a cartridge, complex rewinding or threading is usually not required (Brown et al., 1977). In education, 8mm competes strongly with 16mm, particularly in the areas of single-concept and continuous-loop films. The most satisfactory film size for large group viewing, however, is the 16mm. Super 8 can be used for individuals as easily as for large groups, but because it is one-third the projected image size of 16mm, it suffers in terms of image quality, which is proportional to area. When Super 8 films are projected on a very bright projector, however, they will look sharper. If the films will be shown on television, cable transmission, or closed-circuit TV, Super 8 is best; Super 8 originals transferred directly to tape formats lose less in quality than do 16mm originals. There are only a few laboratories in the entire country, however, with the range of capabilities for processing Super 8 that are fairly common for 16mm (they are located in New York, Chicago, Los Angeles, and San Francisco).

Costs. A typical 16mm film costs $2,000 to $4,000 per running minute, although it is possible to produce an acceptable quality film at a little over $1,000 per running minute. The cost of Super 8 runs about one-third that of 16mm film.

Video Tape

The state-of-the-art in video-tape production has been advancing so rapidly over the past few years that it is almost impossible to keep up with current changes. These changes are resulting in higher quality and ease of editing in the 3/4" color cassette tape format. The top-of-the-line cameras and decks now produce signals acceptable

for broadcast, a situation that was almost unthinkable just a few years ago.

Video-tape production somewhat resembles film production in terms of the stages: script preparation, taping, and editing. Video tape does not need processing, however, and anything recorded can be replayed immediately. As video tape involves electronic signals (which never appear as images on the tape), the skills needed to produce this medium differ somewhat from those needed for film production. For example, the more sophisticated editing systems now require programming knowledge.

Taping a video program on location usually requires the services of three persons, one on camera (and deck), one on sound, and one to direct. More elaborate location tapings and studio shooting sessions include lighting personnel, additional camera persons, a person to operate the special effects generator, film chain, and others. Additionally, at least one editor is required.

The production of quality educational video should be done by professional crews or producers in 3/4" format; however, many educational institutions have Beta or VHS 1/2" viewing decks, which means that the 3/4" tapes have to be transferred to 1/2". This can result in a poor quality image because of the slower speed and the smaller width of the tape.

Video tapes are well suited for small classrooms, closed-circuit situations, and individual learning experiences.

Costs. Commercially producing a high-quality 3/4" color video-tape master which is then dubbed to a second generation copy would cost approximately $2,000 to $3,000 for a 30-minute cassette. It is possible, however, to work with nonprofit resources, such as intermediate agencies, colleges, schools, or hospitals, for shared use of recording and editing equipment, thus reducing costs.

Videodisc

The videodisc is an unusual medium in that its most frequent applications enhance the effectiveness of other media. It includes a record-like disc, a videodisc player, a display monitor and, often, a separate microcomputer. Like video tape, videodisc can incorporate sound, motion, and still pictures. Because it can store up to 54,000 pieces of visual information, retrieve them very quickly (as compared with video tape), and (with the addition of a computer) access them according to a variety of patterns and criteria, the videodisc offers the potential for information storage and retrieval of visual information in much the same way that the computer is used to store statistical information. Unlike video tape (which may be electronically edited) or film (which may be edited by splicing), a master videodisc cannot be altered. The information is permanent; therefore, it is not effective as a storage and retrieval system which demands periodic updating.

Instructional use of the videodisc can be very effective. The combination of computer capacity, extremely quick access, slow motion, and real-time motion offers the promise of a complete instructional package all on a single disc. This medium, however, is not without its drawbacks. The cost of the videodisc player is comparable to the cost of a quality videocassette player. Added to this is the cost of the video display monitor and microcomputer. Production costs at this time, and for the foreseeable future, are extremely high. To make an effective instructional videodisc, a production team is required which includes a computer specialist, an instructional designer, and a content/education specialist. Videodiscs can and are being produced by smaller groups, but their quality, use of the capabilities of the computer, and the effectiveness of the videodisc medium are obviously reduced. It is, unfortunately, just as easy to produce a poor quality videodisc at a great cost as it is to put together a sloppy video tape or an inconsequential

computer program. Those in the field estimate that the design and development time necessary to produce a quality videodisc exceeds actual production time of the aforementioned by almost ten to one. Videodiscs currently in production, or recently completed, represent months and often years of work, and generally include one particular segment of content -- not an entire course. Some of the educational groups involved in videodisc production plan to offer their discs to other users in the future, but few are commercially available at this time.

Several educational institutions (e.g., the University of Nebraska, the University of Utah) have set up videodisc production groups to work with educational users. It might be possible to work cooperatively with such groups to develop videodiscs which are appropriate for a particular project. The costs, however, may outweigh the tangible benefits at this time. The burden of equipment purchase could also be tremendous, especially when the question of standard formats has not been settled.

Multimedia

With the array of media formats available, it is extremely tempting to develop a multimedia product or package. Certain objectives and budgets may indeed be appropriate for multimedia endeavors, but some may not. Developers of educational products should answer several questions before deciding to produce a multimedia product or package.

- Is this approach the most effective for delivering the content, or could a single media product accomplish the objective?
- Does the media combination have a defined focus--that is, do all media have a defined objective?

- Does the additional cost due to increased production time, equipment, personnel, and so on, become prohibitive?
- How well will the total product fit into an ongoing classroom situation?

It should also be noted that a multimedia product is much more difficult to update than a single format product. If the developer does choose to produce multimedia materials, it would be advisable to consult an expert in multimedia, because the coordination between various formats can be complex.

Television

Television can be regarded in two ways. On one hand, television can convey programs specifically addressing a particular audience for a particular purpose. On the other hand, television programs can attract attention to products which have been produced and used previously.

Ely (1980) makes several recommendations regarding the preparation of visual materials for television:

1. Television is designed to show motion, not still, pictures.

2. Regardless of audience size, the script should be aimed at the individual learner (viewer).

3. The sound track must be directly related to the visual elements and should be in the active voice.

4. The narration should not tell what is on the screen unless interpretation or clarification is necessary or a critical point must be stressed.

5. The script should offer a logical flow of visual information.

6. Contrast in visuals should be clear but not extreme. Avoid large areas of white since the TV camera picks up strong light reflections which cause glitter and flare.

7. Keep details in graphics and slides simple and bold. If a visual is "busy" or includes too much material, it will be distracting to viewers. Irregular lines are accentuated on close-ups and unevenness of lines and lettering is enlarged on the TV screen.

8. Photographs should have good contrast, proper focus and good resolution since any original defects will be enlarged on a TV screen. (p. 27-28)

The following section presents an overview of four potential options for television broadcasting: educational stations, commercial stations, cable television, and closed-circuit television.

Educational Television. Educational television stations use the same Ultra High Frequency (UHF) band plus 2" format as do commercial television stations. Because their funding is limited, productions are modest in scope and there is a greater reliance on the use of prerecorded programming that is not original to the station. Educational programs generally tend to communicate a structured body of information, ideas, or skills, and are often produced in series, as a supplement to conventional instruction.

Educational stations are an ideal way to reach a large potential audience at a relatively low cost. The feasibility of airing productions on local educational stations can only be determined by actual contact with the station. Educational television networks may be accessed through

local universities, colleges, public schools, libraries, and other local agencies.

Commercial Television. The most widespread method of broadcasting is by electronic means through the air waves. In this country, commercial television stations transmit through the Very High Frequency (VHF) band of channels 2 through 13. The costs of operating VHF transmitters are considerable and well beyond the reach of any but regional or national agencies.

Commercial stations currently use large format television equipment (2" format for cameras and editing equipment), but the major networks are changing to a 1" Type C format. By doing so, they can achieve an equally clear (or better) image as the 2" type, at half the cost. Smaller formats, such as 3/4" video, may be transmitted through the use of a device known as a time base corrector so that, theoretically, it would be possible on a technical basis for an agency-produced video tape to be aired on national television. Commercial stations, however, do not have a strong incentive for producing or airing educational programming because the profit motive is lacking. Educational programming is severely limited on commercial television.

The reduction of federal funding for the Public Broadcasting Service (PBS) would indicate that at the present time it may be difficult to get network airing for independently produced programming not contracted by the network.

Cable Television. An alternative to open broadcasting (either commercial or educational stations) in smaller locations is by cable. Complex cable systems, known as carrier systems, offer better reception than broadcast distribution and are less subject to interference. A cable network has greater capacity and a far greater audience involvement and feedback potential than broadcast, especially where return paths allow audiences to respond by signalling with codes. Inherently, it allows for

experimentation with human interaction, and so opens up possibilities of working in areas of social concern, intimacy, and the like. In theory, cable distribution is preferable to open broadcasting for educational purposes. As the number of transmittal channels are not as restricted as on broadcast, there is far less likelihood of being constrained by time and space.

Depending upon the city contract, a cable system may offer many producing services to the public (including nonprofit agencies). There may be an opportunity to produce material for direct transmission live from a studio, or to use their 1/2" or 3/4" recording equipment and editing equipment for transmission at a later date. Very often, there is a request from the cable system that if air time is reserved by an agency, it be as a consistent time slot. This means that a series has to be produced, rather than a single production. The potential for producing for cable television is enormous, and, at this time, underutilized.

Closed-Circuit Television. In its simplest form, closed-circuit television is a single television camera linked by cable to a receiver. For educational purposes, it can be used in classrooms and lecture halls to show a group of people small-scale objects or experiments which otherwise could only be viewed by a few at a time. By linking several receivers to the cable system, a number of classes can be served by one teacher. And, a longer connecting cable allows for remote viewing of dangerous or inaccessible processes.

The closed-circuit system is modular and open to expansion; its capability is controlled only by technical and economic considerations. It is quite feasible to produce for closed-circuit television. Emphasis should be on content and audience, with simpler media applications being the most relevant.

Distribution

Even though there are a number of similarities in the issues faced in planning for the distribution of print or nonprint products, there are also important differences which need to be considered.

As has been discussed, nonprint products range from simple slide presentations to professionally produced programs appropriate for commercial television. Because the range of choices is so great, it is imperative to base any dissemination plan on the kind and quality of product being developed. For example, if a product being developed were of very high quality and suitably formatted, commercial or educational television might provide the dissemination vehicle. Another example could be to take advantage of one medium to disseminate another, as in the use of video tape to distribute what was originally a slide-tape show.

Whatever method is selected for packaging the product for its dissemination and distribution, a key step is to make others aware of its existence. Options for accomplishing this goal include the use of brochures, newsletters, presentations at meetings or conferences, and in some cases, the purchase of advertising space in selected journals or newspapers or the purchase of radio or television spots. A major consideration for dissemination and distribution is cost; another is the desired outcome. A product which has potential for volume sales might make commercial advertising viable; many educational products would be more appropriately advertised with a less ambitious approach.

To summarize, several of the major items to consider when making dissemination decisions include: cost, packaging requirements, staff time available for dissemination activity, product quality, product suitability for certain media, and dissemination objective.

Copyrights and Permissions

The requirements and procedures for obtaining permissions or copyright releases for nonprint products parallel those discussed in the chapter on print materials. If you plan to use any material -- photographs, text, music or lyrics, graphics or quotes -- from a copyrighted source, you must obtain a written release. In some cases, a fee will be required. Many times, use of material for educational purposes carries only a small fee or none at all. Fees for use of material in a product which will receive widespread dissemination, or which will be commercially produced and distributed, may be substantially higher. Processes for obtaining copyright release should be initiated early during the planning and development of the product so that any fees can be included in budget planning. Also, it is far easier to substitute material during the script development phase than to edit out material from a finished product.

Summary

Today's educational product developers have before them a spectrum of media formats from which to choose. Careful analysis of the intended purpose and audience in order to ensure use of the most appropriate mode of presentation, and rigorous attention to development and production processes are essential. Some forms of nonprint media products can be produced successfully by developers themselves; others should be produced either by or under the direction of experienced media professionals. It is hoped that the material in this chapter has provided guidelines for developers to make the most informed choices for their educational media products.

Glossary

Audio Tape

Cassette: A compact unit housing a spool of 1/4" magnetic tape and a takeup reel. Cassettes permit quick loading and have a full mono/stereo compatability.

Dropout: The loss of a recorded signal during playback due to imperfections on the tape. Good sound tape is practically free of dropouts.

Dual Track (Half-Track) Recorder: Usually a monophonic tape recorder with a half-width recording head that makes it possible to record one track on the tape and then, by turning the tape over, record a second track in the opposite direction.

Dub: A copy of another sound recording

Feedback: Sound caused by a system's microphone pickup of the sound output from its own speakers.

Fidelity: A measure of the degree of exactness with which sound is reproduced or duplicated.

Four-Track (Quarter-Track) Recording: A system by which four different channels may be recorded on adjacent tracks and mixed.

Frequency: The repetition rate of cyclic energy, such as sound, expressed in Hertz.

Frequency Range: The range between the highest and lowest pitched sounds which a tape recorder can reproduce at a usable output.

Full-Track Recording: Applies to 1/4" tape only and defines the track width as equal to the tape width.

Hertz: A unit that measures frequency (equal to one cycle per second).

IPS (ips): An abbreviation for inches per second tape speed.

Jack: Receptacle for a plug connector leading to the input or output circuit of a tape recorder or related equipment.

Leader: Special tough nonmagnetic tape which is spliced to either end of a magnetic tape to prevent its damage. Also used for timing between musical sections.

Microphone: A device that converts sound into elecrical signals that can be used by other pieces of audio equipment. Microphones vary in sound quality, generating system used, directional patterns, and impedance. Common directional patterns include:

Omnidirectional: A microphone that picks up sound from all directions.

Cardioid, Unidirectional: A heart-shaped microphone that picks up sound primarily in the direction it is pointed. It does not pick up sounds to its rear.

Bidirectional: A microphone that picks up sound in front of and behind itself. It does not pick up sound from either side.

Mixer: A device by which signals from two or more sources can be blended and fed simultaneously into a tape recorder at proper level and balance.

Monoaural Recorder: A single channel recorder.

Open Reel: Designates reel-to-reel tape recorders as opposed to quick-loading cassette types. This is the format for edited tapes.

Pre-Amp: An amplifer that raises extremely weak signal levels, such as those from a microphone, to a level sufficient to drive a power amplifer.

RF: An abbreviation for radio frequency, which is that part of the general frequency spectrum between audible sound and infrared light.

Splicing Tape: A special, pressure sensitive, nonmagnetic tape used for splicing magnetic tape.

Tape Speed: The speed at which tape moves past the head in record or playback modes. The stand is 7-1/2 inches per second (ips). Professional recording is often 15 ips.

VU Meter: A volume unit meter that monitors recording levels and maintains them within disortion limits of the tape.

Film

Cut: An instantaneous transfer from one shot to the next.

Cutaway: A shot that temporarily draws the spectator's attention away from the main action to a related action.

Dissolve: A gradual merging of the end of one shot into the beginning of the next.

Dubbing: The process of re-recording the sound track of a film to make voice changes or adding sound to a film after photography.

Editing: The process of assembling the shots into their final order, cutting them to their final length, and synchronizing a sound track.

Fade-In: A gradual merging of the end of one shot into the beginning of the next.

Fade-Out: A shot that gradually disappears into darkness.

Flip Frame: The "flipping" of frames to reveal a new scene; usually speeds up time.

Long Shot (LS): Shows the subject at a distance. Also known as the establishing shot, as it shows the subject in relation to the surroundings.

Magnetic Sound Track: Sound waves electronically recorded on an iron oxide tape.

Mix: Sound tracks of dialogue, narration, sound effects, and music, lined up with the visual images, combined into a final composite sound track.

Montage: A series of shots dissolving one into the other to suggest a passage of time, a journey, and so on.

Optical Sound Track: Sound track recorded on film through a photographic process.

Out-Take: A shot not used in the final film.

Silent Speed: Film that is projected at 16 frames per second (16mm).

Sound Speed: Film that is projected at 24 frames per second (16mm).

Sound Track: A narrow path on a length of film that carries the sound recording.

Supers: One scene imposed over another.

Synchronous Sound: Dialogue that is recorded at the precise moment of photography.

Work Print: An inexpensive, low-quality print of selected scenes used for editing purposes only.

Filmstrip

50 Hertz System: A system for automatically advancing filmstrips by an inaudible 50 Hz signal on an audio cassette. As cue tone and audio occur in the same track, the cassette may be used in both directions. Ordinarily prepared by commercial producers.

Filmstrip Format Ratio: A 24 x 32mm format filmstrip which is smaller on the sides than a 35mm format slide (24 x 46mm). Care must be taken to keep important information towards the center.

Pulse: An inaudible "beep" or encoded signal that advances the filmstrip as programmed.

Slide Format Ratio: 24 x 36mm format. When taking slides for an eventual filmstrip format, it is important to remember that 2mm on each side of the slide will be cut off.

Slide Tape

Dissolve: Ingoing and outgoing visual images are superimposed for a set period of time. One image fades out as the other fades in.

Dissolve Control: A device that controls one or more projectors in such a way that the visual images are superimposed and faded in and out at a fixed or variable rate.

Electronic Pause: A cue signal other than a 1,000 Hertz signal that commands the projector to stop automatically, thus allowing for response time.

Encoder: This device is used with an information storage device, such as a tape recorder, to produce synchronizing pulses or signals that later decode to operate projectors in synchronization. It may also be known as a signal generator or pulser.

Focal Length: When a distance scale on a projector lens is set on infinity, this is the distance from the lens to a point behind the lens where light rays are focused. The shorter the focal length of the projector lens, the larger the image size on the screen, given a set projection distance.

Interlock Projector: A special type of projector used in multiprojection systems that can be interconnected with another projector or tape recorder to run in synchronization.

Programmer: A multichannel, multifunction device that can perform such preset functions (when activated by a synchronizer) as controlling dissolves, projectors, and the like.

Pulse: An inaudible "beep" or encoded signal that advances slides as programmed.

Random Access Projector: A device that allows slides to be projected in any order of sequence, regardless of placement order in the slide tray.

Slide-Sync Recorder: An audio tape recorder with the capability of advancing, on cue, one or more projectors.

Sound Slide Projector: A slide projector with a built-in source of sound. Usually the sound unit controls the slide advancement automatically.

1,000 Hertz System: A system that transmits a 1,000 Hz signal to advance slides automatically. The signal is recorded on a separate sound track from the audio track on a stereo cassette.

Video Tape

Audio Cue: A word in a script to denote shifts in action, camera position, or other technical events; in electronic editing, audio cues are used to signal edit points.

Beta: A 1/2" video cassette format, differing from 1/2" VHS format, and not electronically compatible with it.

Cassette: A container which holds a quantity of video tape, utilizing a double reel system. 3/4" tape has become the software standard in the United States. One-half inch Beta and VHS cassettes are becoming more popular for home and educational use.

Character Generator: An electronic device that displays letters or numbers on a television screen. It is used for direct graphics in video production and has a limited number of alphabet faces available.

Chroma Keying: An electronic introduction of a color background into a scene.

Composite Video Signal: The video signal containing both picture and sync information.

Cross-Fade (X): Fading out one video signal and fading in another as a simultaneous movement.

Cue Control: A device on a video deck to advance a tape rapidly for sampling or for findng a desired section.

Deck: See Video Deck.

Electronic Editing: The process for editing video tape using at least two linked video decks. The video tape is not physically cut; rather, segments of the original tape are electronically transmitted to a second tape and the original tape is left intact.

Film Chain: A system of fixed television camera(s) and slide, film, or filmstrip projectors utilized to transmit projected images through a television system.

Master Tape: An original program produced by editing various portions or other recordings onto a new reel or cassette of tape. The resulting tape is one generation away from the original materials from which it was recorded.

Monitor: A television set capable of accepting composite video signals directly from a camera, video recorder, or closed circuit system. It is also capable of producing a composite video signal output from a broadcast input signal, recording directly "off-the-air."

Monochrome Signal: A black-to-white signal containing only luminance information, capable of being received either by a black-and-white or color receiver as a black-and-white image.

Multiplexer: A unit designed to feed the projection of slides, film, or filmstrips into one television camera as video information.

Narrative Track: Oral information in support of the visual image; also used to expand the onscreen action beyond the confines of the moment. It is usually recorded after the film is edited and is "laid in" alongside the scene to which it relates.

NTSC Video Standards: The standard of the National Television Standards Committee, with 525 horizontal scan lines, 60 frames per second. Currently used in the United States and Japan.

Open Reel: Video tape mounted on an unenclosed reel. It is becoming less common in 1/2" and 3/4" video formats. Video tape in cassettes is now the norm.

Special Effects Generator (SEG): A component in video production to mix, switch, key, and otherwise process various video signals to create a final program signal. Also known as a switcher.

TV Storyboard: Sheets of paper with blank television screens on them that are used for roughing out the action of a program.

U-Matic: A type of 3/4" video cassette system.

Ultra High Frequency (UHF): The transmission of television on channels 14 through 83.

Very High Frequency (VHF): Television transmission on channels 2 through 13.

VHS: A 1/2" video format not compatible with the Beta 1/2" format.

Video Deck: An electromechanical device capable of recording, storing, and transmitting an electronic signal which contains audio, video, and control information.

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Resources:
Audio-Visual Materials

Agencies, Organizations

Association for Educational Communications and Technology (AECT). 1126 16th Street NW, Washington, D.C. 20036. (202) 833-4180

This agency is composed of national, regional, and state groups whose purpose is the improvement of education through the systematic planning, application, and production of communications media for instruction.

Great Plains National Instructional Television Library (GPN). PO Box 80669, Lincoln, NE 68501. (402) 472-2007

The GPN evaluates, develops, and catalogs instructional television materials.

National Center for Audiotape (NCAT). University of Colorado, Stadium Building, Boulder, CO, 80309. (303) 492-7341

This organization re-records and distributes low-cost tape recorded educational programs and maintains 14,000 master tapes on many subjects.

National Center, Educational Media and Materials for the Handicapped (NCEMMH). 356 Arps Hall, Ohio State University, 1945 N. High Street, Columbus, OH, 43210. (614) 422-7596

This organization facilitates the production and distribution of instructional media and materials

designed for use in the education of handicapped students.

National Diffusion Network (NDN). State Facilitator. National Diffusion Network (NDN) Division, Department of Education, Riviere Building, Room 802, 1832 M Street NW, Washington, D.C. 20036. (202) 653-7003

National Institute of Education (NIE) Regional Exchanges and Regional Educational Laboratories:

Applachia Educational Laboratory. PO Box 1348, Charleston, WV 25325. (304) 347-0420

CEMREL, Inc. 3120 59th Street, St. Louis, MO 63139. (314) 781-2900

McREL. 4709 Belleview, Kansas City, MO 64112. (816) 765-2401

McREL. Colorado Women's College, Curtis Hall, Denver, CO 90220. (303) 399-9285

Northeast Regional Exchange. Merrimack Education Center, 101 Mill Road, Chelmsford, MA 01824. (617) 256-5985

Northwest Regional Educational Laboratory. 300 SW Sixth Avenue, Portland, OR 97204. (503) 248-6800)

Research for Better Schools, Inc. 444 North Third Street, Philadelphia, PA 19123. (215) 574-9300

Southwest Educational Development Laboratory. 211 East Seventh Street, Austin, TX 78701. (512) 476-6861

Southwest Regional Laboratory Research and Development. 4665 Lampson Avenue, Los Alamitos, CA 90720. (213) 598-7661 Ext. 367

Resource and Referral Service (RRS). National Center for Research in Vocational Education, Ohio State University, 1960 Kenny Road, Columbus, OH, 43210. (800) 848-4815 or (614) 486-3655

The RRS will provide information on various agencies which can provide assistance with the process of development of educational materials.

U.S. Department of Education Regional Offices.

Headquarters. Regional Ofice of Coordination, U.S. Education Department, 400 Maryland Avenue SW, Wahsington, D.C. 20202.

Region I. Regional Commissioner, Office of Education, JFK Federal Building, Boston, MA 02203.

Region II. Regional Commissioner, Office of Education, 26 Federal Plaza, New York City, NY 10007.

Region III. Regional Commissioner, Office of Education, 3535 New Gateway Building, Philadelphia, PA 19108.

Region IV. Regional Commissioner, Office of Education, 50 Seventh Street NE, Atlanta, GA 30323.

Region V. Regional Commissioner, Office of Education, 300 S Wacker Drive, Chicago, IL 60606.

Region VI. Regional Commissioner, Office of Education, 1114 Commerce Street, Dallas, TX 75202.

Region VII. Regional Commissioner, New Federal Office Building, 601 E 12th Street, Kansas City, MO 64106.

Region VIII. Regional Commissioner, Federal Regional Office Building, 1961 Stout Street, Denver, CO 80202.

Region IX. Regional Commissioner, Office of Education, 50 United Nations Plaza, Room 205, San Francisco, CA 94104.

Region X. Regional Commissioner, Office of Education, Arcade Plaza Building, 1321 Second Avenue, Seattle, WA 98101.

Videotape Network, 115 E. 62, New York, NY. (212) 759-8735

The Videotape Network is a profit-making organization which rents video tapes and provides consultation in the use, selection, and production of video programs to over 200 colleges.

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Super 8: The modest medium (Monographs on Communication Technology and Utilization, #1). New York: Unipub, 1977.

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Some Guidance for the Evaluation of Dissemination Activities

Carter Allen
Lily A. Kliot

In providing some guidance for planning and carrying out appropriate evaluation of dissemination activities, it is important first to clarify some of our underlying assumptions. First, we believe that the most worthy purpose of dissemination is to foster the implementation of effective educational practices. While the spread of information, the exchange of ideas, and the enhancement of professional capacity are all part of dissemination, the best dissemination aims at the transfer of an educational practice from one setting to another. Second, we believe that evaluation and dissemination are equal partners in the transfer of educational practices to new settings. In particular, evaluation of a practice before it is widely disseminated demonstrates the social responsibility of the program developer to ensure the worth of his or her practice for improving the quality of education. Third, dissemination aimed at the implementation of a proven

practice in a new setting includes support to the new user of the practice, beginning with the development of products which convey the practice and including a wide variety of technical assistance and staff development support.

Dissemination is defined here as those activities which promote the wider use of effective practices, and hence includes both the distribution of products and the provision of other services in support of implementation. Evaluation of dissemination activities is carried out to enhance the distribution of those practices known to work and to ensure their effective spread and appropriate use.

The first section of this chapter discusses the nature of dissemination, proposes three stages in the dissemination process, and clarifies the role evaluation plays in this important activity. The second section lists appropriate evaluation questions for each stage, and identifies resources useful for evaluation. The third section focuses on product evaluation in each of the three stages of dissemination and discusses how product development fits in with an overall dissemination strategy. The final section provides full information needed to access each evaluation resource, with brief annotations.

Dissemination and Evaluation in Brief

What is Dissemination?

The goal of dissemination in education is to promote the thoughtful and appropriate use of effective innovations. This goal is achieved by identifying effective innovations, promoting awareness of innovations among potential users, providing information to support intelligent

decisions about their use in particular settings, helping to implement an innovation in a given setting, and training others to disseminate an innovation. Dissemination activities include developing innovations for dissemination, packaging these innovations so that others can use them, distributing products that represent an innovation, and training others in the use of an innovation, as well as other activities that contribute to accomplishing this overall goal. These other activities include additional product development endeavors, including awareness and advocacy campaigns and establishing communication networks through newsletters, brochures, and pamphlets.

All dissemination activities can be grouped into these stages:

1. **Development** of the practice and of the packaged products that support it;
2. **Demonstration** of the practice at work and of its ability to be replicated in new settings; and
3. **Diffusion** of a practice to achieve implementation in new settings.

The Role of Evaluation in Dissemination

Educational evaluation is the systematic collection of reliable information about educational activities. Evaluation improves education by allowing educators to judge the worth of a particular practice and to narrow or broaden determinations concerning the continued use of that practice and adjustments necessary to improve the practice.

Evaluation serves several appropriate functions in the dissemination process, the most fundamental of which is to inform the program developer and other disseminators about the effectiveness of individual dissemination activities and of the dissemination strategy as a whole.

Such information is particularly useful in the demonstration stage, since it can help improve the dissemination approach before substantial resources are committed to carrying it out. For example, a teacher's guide for a curriculum should be field tested and found effective before it is widely distributed. Evaluation can tell us if we are ready for full-scale diffusion and if not, what parts of our practice and our dissemination strategy need the most attention.

The development of a dissemination system is as complex and demanding a task as the development of an innovation to be disseminated. It is further complicated in that much of the action takes place at a distance and outside of the control of the disseminator. Careful evaluation at each stage of dissemination can bring this action within view. Evaluation of the development stage demonstrates the effectiveness of an educational innovation and identifies its essential elements. In the demonstration stage, evaluation shows whether or not the practice is effective in a variety of settings and whether or not the developer can support its replication by new users. Evaluation during diffusion activities assesses the ultimate impact of the dissemination effort.

Dissemination activities do not occur by magic, but require substantial resources for their accomplishment. If disseminators of innovations want to be accountable to the public for the resources they consume, then they must provide evidence that their dissemination leads to widespread use of proven practices, that it achieves such use at an acceptable cost, and that widespread use leads to positive impact on important educational problems. Appropriate evaluation provides evidence to defend such claims.

Dissemination Stages, Evaluation Questions, and Information Sources

We began this chapter by stating the main purpose of dissemination: the implementation of effective educational practices in new settings. Achieving this end requires three distinct events which we have identified as the stages of the dissemination process. First there must be an effective educational practice; second, the replicability of that practice in new settings must be demonstrated; and third, the practice must be successfully implemented in a variety of new settings.

Development is the creation of an effective and innovative educational practice, including instructional materials and other products that communicate the practice. Demonstration includes showing the continued effectiveness of the practice in new settings and organizing effective developer support of new replications. Diffusion is the spread of the successful innovative practice to achieve implementation in a variety of new settings.

Development

In both large- and small- scale educational dissemination efforts, the educator who disseminates the practice is often the educator who developed it. The guidance that this chapter provides is for the developer/disseminator who is aware of the potential to distribute widely his or her practice after it has been developed. While developing a practice for one's own use, there are several ideas to keep in mind that will enhance the likelihood of disseminating the practice more widely. Development for dissemination includes 1) specifying the essential

elements of the practice that make it unique, 2) documenting these essential elements so that the practice can be understood by others, 3) assessing the impact of the practice on teachers and children in the development site, 4) reporting evidence of effectiveness, and 5) packaging materials that support the description and implementation of the practice.

All of these development activities involve evaluation. The kinds of evaluation questions that are relevant to the evaluation of the development stage of dissemination are those that ask whether the practice is clearly specified, whether the practice can be implemented as designed, whether the practice achieves the intended outcomes, and whether the practice can be communicated to others. In evaluating the development of a practice for dissemination, the key questions center around the claims of effectiveness made about the practice and how these claims can be documented. While evaluation of this stage of dissemination is much like the evaluation of any educational practice, the focus is on what can and cannot be disseminated and what will contribute to an effective argument for the worth of the practice to its potential users. Table 1 lists a number of specific evaluation questions for the development stage and suggests sources of information that will help the developer answer these evaluation questions.

A multitude of articles and books have discussed the topic of curriculum evaluation from various perspectives. Provus (1971) presents a model most amenable for organizing the evaluation of a developmental effort, moving from evaluation of the program design through stages of installation, process, and product evaluation to cost-benefits analysis. Borich (1974) presents a set of useful articles, some of which address more directly the evaluation of products as well as programs. Lawson (1974) provides a discussion of the formative evaluation of instructional products, including many useful sample instruments for collecting information from a variety of respondents. Borich and Madden (1977) provide an

Table 1

Evaluation Questions and Information Sources for the Developmental Stage

Evaluation Questions	Information Sources
1. Are the essential elements of the practice adequately specified?	- review of specification documents - expert review of the practice in operation - naturalistic study of the practice
2. Do teachers follow the essential elements of the practice as specified?	- observation of teachers in operation - teacher or child interviews - naturalistic study of the practice
3. Do the instructional materials and other tangible products operate as specified?	- observation of children working with materials - interviews or ratings from teachers - interviews of children - expert review of materials
4. Do children served by the practice behave as specified?	- observations of children - interviews or ratings of teachers and parents - interviews of children - examination of child products, teacher records
5. Do other parts of the practice operate as specified?	- observation of children or teachers - interviews of children or teachers - naturalistic study of the practice - parent interviews
6. Does the practice have the promised effects on children?	- standardized tests of skills and knowledge - developer-made tests of skills and knowledge - scales of attitudes, beliefs, and other affective dimensions - observations of behavior, including counts, charts, etc.
7. What does it cost to operate the practice?	- budgets - expert cost analyses - opportunity cost reviews

annotated catalog of useful instruments that are readily available. Guba and Lincoln (1981) indicate how naturalistic methods can be applied to responsive evaluation design. The Joint Dissemination Review Panel IDEABOOK (Tallmadge, 1977) presents standards and guidelines used for national approval of programs as exemplary, and hence, as worthy of widespread dissemination.

Demonstration

When a developer has succeeded in building an effective educational innovation, the next stage in the dissemination process is demonstrating that the practice is effective for others and that the developer can support replication by new users. Specific developer/disseminator activities at the demonstration stage include 1) piloting the practice in new and perhaps different types of settings, 2) developing staff development and technical assistance activities to support new users of the practice, and 3) providing opportunities for potential users to examine the practice in operation so that they can make an informed choice about using the practice.

In essence, evaluation in the demonstration stage provides evidence of the replicability of the innovative practice. Can others be trained to use the practice? Is the extent of child and teacher change in new settings similar to that in the development site? Does the developer of the practice provide adequate support service, in training, technical assistance, and program materials, to enhance the use of the practice in new settings? Are essential elements of the practice transferred to new settings?

Table 2 suggests a variety of information sources that will help answer these and similar questions. The sources of information for demonstration begin to address the dissemination strategy directly, while information sources for development focus more on the quality of the

Table 2

Evaluation Questions and Information Sources for the Demonstration Stage

Evaluation Questions	Information Sources
1. Can the developer train others to use the practice?	- trainee skill assessment - observation of trainee behaviors - interviews with trainees during training - ratings of training by participants
2. Does developer technical assistance help others replicate the practice?	- logs of technical assistance delivered - ratings of technical assistance by users - observation of technical assistance provision
3. Do materials help other replicate the practice?	- expert review of materials - interviews with users of materials - user ratings of materials
4. Is the extent of child and teacher change in new settings similar to that in the development site?	- tests of children's skills and knowledge - tests of teachers' skills and knowledge - observations of children and teachers - examination of classroom products - scales of attitudes, beliefs, and other affective dimensions
5. Is there evidence that the practice exists in the original and new settings?	- observation of old and new sites - record of funds or other resources committed to the practice - Levels of Use interviews (Loucks, Newlove, & Hall, 1976)
6. Are essential elements of the practice transferred to new settings?	- checklist of essential elements - developer observation of new sites - interviews with new users

practice. Dissemination strategies can be assessed by 1) testing the skills of the teachers being trained to use the practice, 2) observing a pilot replication site with a checklist of essential practice elements, and 3) logging the kinds of training or other support which require modification. The evaluation tools and experience gained through the demonstration stage become important in the evaluation of diffusion efforts.

Some good sources for further discussion of this type of evaluation are available. Fullan and Pomfret (1977) compare and contrast various ways of defining and measuring implementation of an instructional program. Loucks, Newlove, and Hall (1976) provide a well-known way to assess the degree of internalization of an innovation through interviews. Reinhard (1976) shows how a teacher training program can be evaluated, and includes copies of instruments. Davis and McCallon (1974) indicate how workshops can be evaluated, including several instruments which have been standardized.

Diffusion

Once the educational practice has been proven effective and a dissemination strategy has been tested, the developer is ready for the widespread promotion of the innovation. Activities in this stage of the dissemination process include publicizing the availability of the effective practice, providing training and technical assistance in support of the use of the practice in new settings, and following up on the fidelity of the replication of the practice in new settings.

Evaluation during the diffusion stage repeats some of the evaluation activities of the two previous stages in the dissemination process. On one hand, the developer continues to evaluate the effectiveness of the practice in the replication sites. On the other hand, the developer

must now assess the adequacy of the strategies supporting the use of the educational practice in new settings.

The evaluation questions related to the effectiveness of the practice in new settings are similar to those asked about the practice during its development. The evaluation questions for the widespread diffusion of the practice focus on awareness of the practice among relevant audiences, the selection of the practice for replication, and the implementation of the practice consistent with the specifications of the developer. It is this second set of questions and the related information sources on which Table 3 concentrates.

Diffusion is often considered the serious business in dissemination, for through its presentation a program may attract attention to itself or fall into relative obscurity, outdone by its competitors. The evaluation of diffusion begins with the question of whether the developer's awareness activities are effective in making the practice known to the target audiences. Whether the awareness strategy is a broadcast mailing of brochures or a presentation at a professional conference, the developer will need to know if the activity is effective in stimulating further interest from the audience. A simple way of collecting information on awareness activities is to follow up those activities by logging requests for further information or services related to the practice. A follow-up questionnaire is a useful means to ask whether or not the materials prepared by the developer help educators choose from among alternative practices.

One of the most significant indicators of successful diffusion is the adoption of an educational practice in new settings. By compiling the demographic characteristics of replication sites, the developer can determine under what conditions and in what kinds of sites the practice is implemented. Through periodic visits and telephone calls to these sites, a developer will be able to know whether or not the new users continue with the practice. If they do continue using the practice, it is important to look at the

Table 3

Evaluation Questions and Information Sources for the Diffusion Stage

Evaluation Questions	Information Sources
1. Are awareness activities and materials effective in promoting choice of the practice	- log of requests for additional services - records of selection of the practice for implementation (e.g., purchases of practice materials)
2. Do training, technical assistance, and materials enhance the replication of the practice?	- pre- and posttesting of trainee skill attainment - interviews with users of developer support services - observation of replicators using materials - ratings of training, technical assistance, and materials by replicators
3. What forms of support from the developer enhance positive outcomes and continued use?	- materials feedback forms - ratings of training and technical assistance by replicators - ratings of support services by replicators
4. What results are achieved in replication sites?	- observation of teacher and child behavior - tests of children's and teachers' skill and knowledge - scales of attitudes, beliefs, other affective dimensions
5. If the practice is adapted to new settings, how is it adapted?	- developer site visitation to replicators - checklist of essential elements - Levels of Use interview (Loucks, et al., 1976)
6. In what kinds of settings is the practice implemented? Under what conditions?	- records of demographic characteristics of school, community - organizational charts of replicating agency - cost information for replication in new settings - evidence of level of commitment of resources in new sites
7. Do new users continue to use the practice?	- records of resource commitment to the new practice - site visitations over time - follow-up questionnaires - Level of Use interview (Loucks, et al., 1976)

child test scores and to observe the teacher classroom behaviors at the new sites to ensure that the practice has been adopted effectively. These observations will also show how well the support material, teacher's manuals, curricula, and other materials contribute to effective replication of the practice. Such observations and tests done in the early stages of materials development is what is known as field testing, assessing the worth of support materials and curricula before a major diffusion campaign begins.

Questions more specific to field testing and to diffusion activities in particular must be asked in order to direct changes in diffusion strategies and in the primary and support materials. This set of questions addresses the developer's role in the successful diffusion of an effective educational practice. What forms of support from the developer enhance continued effective use of the practice? Do the training, technical assistance and other support services enhance the use of the essential elements of the practice? If materials are the basic support for replication, are they adequate to support a high fidelity replication of the practice? (Refer again to Table 3 for questions to consider during the diffusion of an educational practice and some ways to collect information to answer them.)

Bank and Snidman (1981) provide specific procedures for the evaluation of diffusion efforts oriented toward activities in the National Diffusion Network, but applicable to any diffusion effort. Emrick and Peterson (1978) describe some national efforts to evaluate diffusion efforts; both the problems encountered and the solutions offered are informative. Green, Ahrends, and Ahrends (1976), Havelock and Havelock (1974), and Kennick (1980) provide examples of evaluations of individual diffusion efforts.

Focus on Product Evaluation

In the introduction to this chapter, we said the purpose of dissemination was to promote widespread use of educational practices that work. Products which convey such practices are the foundation of the system that supports appropriate replication, and developers should give special emphasis to product evaluation during each stage of dissemination.

Product Evaluation During Development

During the development stage of dissemination, the emphasis will be on documenting the essential elements of the practice and on packaging instructional materials and other products needed for its operation. The most appropriate type of evaluation of products at this stage of dissemination is expert review. Evaluation concerns such a review might address include:

1. **Content accuracy.** Do the products contain accurate content, use correct terminology, and otherwise present the content in appropriate ways?
2. **Face validity.** Is it likely that the product will achieve its intended purpose?
3. **Internal consistency.** Are the parts of the product appropriately coordinated, is the product complete, and is it related to the instructional goals of the practice as a whole?
4. **Medium appropriateness.** Is the correct medium used and is it used correctly?

Review of products during the development stage of dissemination generally focuses on the rational analysis of their content, format, and appropriateness in light of the instructional objectives of the practice. Content

specialists are appropriate persons to review content accuracy, internal consistency, and face validity. Specialists in the media of presentation (e.g., audiotape, film, print) can best address the appropriateness of their use. Potential users are expert reviewers of all aspects of the product; they offer the perspective of those who will be directly involved in replication of the practice.

No matter who reviews a product, it is important to provide specific guidelines for the review. Armstrong (1973), Far West Laboratory for Educational Research and Development (1981), Lawson (1974), and Eash (1969) provide a number of questions that could direct such a review. Specific questions posed or other guidelines provided should be derived directly from a clear conception of how the product is intended to be used, and this conception should be communicated to each reviewer.

Product Evaluation During Demonstration

In the demonstration stage of dissemination, field testing of educational products is the central evaluation method. The purpose of the field test is to try out each product under actual conditions of use to see if it performs as desired with the intended users. Evaluation of products during the demonstration stage ensures that these products support the larger intent of this stage: showing that the practice works in new settings with appropriate replication support.

Several specific evaluation concerns can be raised during field testing:

1. **User reaction.** What is the reaction of users to the product?
2. **Adaptability.** Is the product readily adaptable to the local situation?
3. **Acceptance.** Do teachers and students accept the new product?

4. **Continued use.** Is interest expressed by users in the continued use of the product?
5. **Modifications.** What changes are needed at sites where the product will be used (e.g., structural modification in the teaching/learning space, special training for using the product)?

Observations, interviews, ratings, questionnaires, and other means may be used to determine if the products are being used as intended and if their use leads to the intended outcomes. Field-test users can make notes in their copies of the materials where particular problems arise, for later follow-up by the developer. Children can be observed as they use instructional materials to determine areas of particular success or difficulty. Student error patterns in tests and other evaluations of learning can be examined to identify places at which instructional products may be misunderstood. Borich (1974), Borich and Madden (1977), Fullan and Pomfret (1977), and Lawson (1974) all provide useful guidance for such efforts.

Product Evaluation During Diffusion

Developer/disseminator activities during this stage emphasize the provision of replication support, including careful monitoring of the fidelity of practice implementation at replication sites. As with much of evaluation, evaluation of products at this stage ultimately rests on the assessment of the effectiveness of those products. The focus of product evaluation at this stage of the dissemination process is on how effective the product is in helping teachers teach and in helping learners learn, that is, on educational impact. Educational impact refers to change or gains in the direction of the stated goals of the educational practice being disseminated.

Table 4

Sample Materials Feedback Postcard for Print Products

Project _____ Publications Survey

PRODUCT:

After reading and reviewing this publication, please answer the questions and return to Project _____ simply by dropping this card in the mail.

Overall, this information is: ( ) useful ( ) not useful ( ) interesting ( ) not interesting

Which section did you find most useful? _____

I will use the information in this publication to _____

_____

I ( ) will ( ) will not share this information with my colleagues, because

_____

_____

Comments _____

_____

_____

At the diffusion stage, the developer is not often around to determine how products are used, and hence must rely on surveys and other instruments to find out if they function as intended. Simple feedback postcards, with return postage prepaid, can be included with each product; Table 4 presents a sample postcard for print product feedback. The postcards provide an indication of the immediate reaction of the user to the product, because they are most often returned soon after the material is received. If distribution lists of products are maintained, then surveys can be sent to a sample of users some time after the product is received; this allows

Table 5

Sample Materials Feedback Form for Print Products

PRODUCT NAME:

PURPOSE: Your feedback helps us to judge the usefulness of this product and to improve similar efforts in the future.

Directions: Please answer each question below which applies to you. Include comments in the spaces indicated or on the back. Return the completed sheet in the envelope provided; no stamp is necessary. Your answers will be combined with others of the target audience and are completely anonymous.

Thank you for your help!

1. Did you receive this product? ( ) yes ( ) no ( ) I'm not sure

2. How many persons or projects did you contact for further information?

   _____

3. How many persons or projects contacted you for further information?

   _____

4. Did you engage in any collaborative ventures as a result of this effort?

   ( ) no ( ) yes (describe in the comment section below)

5. Did you make use of this product in other ways?

   ( ) no ( ) yes (describe in the comment section below)

6. Comments: _____

   _____

   _____

Table 6
Sample Print/Nonprint Evaluation Form

(This portion to be filled out by the developer.)

(Circle) Film, Filmstrip, Motion Picture, Audio Tape, Slide/Tape, Sound Filmstrip, Videotape, Manual, Curriculum, Guide, Other_____

Title _____

Reviewed by _____ Date _____

Recommended Audience _____

Objective(s) _____

_____

CONTENT (Brief description of the material): _____

_____

(This portion to be filled out by user.)

Is the content valid, correct, and truthful? Yes___ No___

Does this material provide additional desirable information which is above and beyond what you can now provide with materials used in this context?

Yes___ No___ If yes, what? _____

_____

Objectives: Explicit and stated___ Implicit (not stated)___ Not evident___

Content: Superficial___ Too detailed___ Well-balanced___

Authenticity (audiovisual): Acceptable___ Not acceptable___

Vocabulary/Reading Level: Excellent___ Good___ Poor___

Organization and Continuity: Excellent___ Good___ Poor___

Photography or Format. Excellent___ Good___ Poor___

Sound (audio): Excellent___ Good___ Poor___

User's Guide or Manual (for audiovisual): Excellent___ Good___ Poor___

General Rating: Excellent___ Good___ Poor___

Recommended for Future Use? Yes___ No___

Please write additional comments on the reverse side of this form.

Note. Adapted from Guidelines in media production by Donald P. Ely. Used by permission.

questions to focus on the degree of use and on the impact of the product. Table 5 presents a sample materials feedback form. More detailed evaluation forms can also be designed which assess clarity of objectives, content, vocabulary and reading level, organization, format, and general rating. A sample form is provided in Table 6. Bank and Snidman (1981), Bleil (1975), Kinnick (1980), and Lawson (1974) provide various methods to address such questions.

Conclusion

The goal of dissemination in education is to promote the appropriate use of effective educational innovations. These innovations include instructional practices and the products required to support these practices. Dissemination stages include development, demonstration, and diffusion; throughout each of these stages, evaluation must be an ongoing activity. The developer must collect information on the effectiveness of the practice and/or product, in order to make modifications and in order to ensure that the final practices and products have proven their effectiveness.

Annotated Reference/Resource List

Armstrong, J. R. (Ed). A source book for the evaluation of instructional materials and media. Madison: University of Wisconsin Special Education Instructional Materials Center, 1973. (ERIC Document Reproduction Service No. ED 107 050)

This sourcebook provides a generalized model for the evaluation of instructional materials and media. This model was developed for use by the Instructional Materials Centers, Regional Media Centers, and Regional Resource Centers. Discussed are systems for the identification and classification of instructional products, a specific process for the classification of information on instructional products, methods of assessing teacher response to products, techniques for the evaluation of products, and sequential analysis as a teacher judgment summarization technique. Appendices contain forms discussed in the text and a bibliography.

Bank, A., & Snidman, N.C. Guidebook for evaluating dissemination activities: Resources for NDN practitioners. Los Angeles: Center for the Study of Evaluation, University of California at Los Angeles, 1981.

This set of materials was developed to assist practicing disseminators in improving the evaluation of their activities. It includes general advice on evaluation planning, specific lists of evaluation questions, and sample instruments in the areas of internal project management, certified trainer operations, awareness, training of adopters, and pre- and postinstallation activities. While some of the material is specific to projects funded through the National Diffusion Network, much of the material is

applicable to any dissemination effort directed at the adoption of effective practices through the provision of training. These materials are most appropriate to the stage of diffusion, as described in the text of this chapter.

Bliel, G. E. Evaluating educational materials. Journal of Learning Disabilities, 1975, 8, 12-19.

This article presents an introduction to materials evaluation and is intended to stimulate the educator to pose the right questions before materials are purchased. Criteria for subjective, personal judgment and for objective, measurable evaluation are offered. The author presents guidelines for materials evaluation based on two key steps: ask the right questions, and be prepared to use the answers.

Borich, Gary D. (Ed.). Evaluating educational programs and products. Englewood Cliffs, NJ: Educational Technology Publications, 1974.

This useful collection of articles about the formative and summative evaluation of educational programs and products includes sections on roles and contexts for evaluation, models and strategies, methods, and techniques. A prologue identifies some useful standards for such evaluation; an epilogue describes the implications for evaluation of evident trends in the use of educational programs and products.

Borich, G. D., & Madden, S. K. Evaluating classroom instruction: A sourcebook of instruments. Reading, MA: Addison-Wesley Publishing Co., 1977.

This useful catalog of many instruments that can be used to evaluate classroom instruction provides full access information and a thorough annotation for each instrument.

Davis, L. N., & McCallon, E. Planning, conducting, and evaluating workshops. Austin, TX: Learning Concepts, 1974.

A useful guide to workshop development which includes a system for workshop evaluation.

Eash, M. J. Assessing curriculum materials: A preliminary instrument. Educational Product Report, February 1969, 18-22.

This brief article presents an extensive instrument developed for the evaluation of learning materials from the standpoint of objectives, organization, and methodology. The instrument is presented in full, and could be readily used for expert review of instructional materials.

EPIE Institute (formerly Educational Products Information Exchange). 475 Riverside Drive, New York, NY 10027.

The objective of this organization is to analyze and collect user data on instructional materials, audio-visual equipment, and testing equipment. It publishes EPIEgram, a semimonthly newsletter, and EPIE Reports, eight times each year.

Emrick, J. R., & Peterson, S. M. A synthesis of findings across five recent studies of educational dissemination and change. San Francisco: Far West Laboratory for Educational Research and Development, 1978.

This review briefly summarizes five major studies of recent nationwide dissemination efforts, drawing some broad conclusions regarding effective dissemination strategies. The methodology of each study is briefly described, including the sources of information used; some of these methods could be

readily applied to the study of individual dissemination efforts.

Fullan, M., & Pomfret, A. Research on curriculum and instruction implementation. Review of Educational Research, 1977, 47, 335-397.

An extensive review of studies on the definition and measurement of implementation, this article compares and contrasts various sources of information for determining the extent of implementation of an innovation.

Green, D., Ahrends, J. H., & Ahrends, R. I. A study of dissemination and diffusion of R & D products in two teacher training networks: Individually Guided Education and Florida Teacher Centers. Portland, OR: Northwest Regional Educational Laboratory, 1976. (ERIC Document Reproduction Service No. ED 163 019)

This research report presents an evaluation of a specific diffusion strategy which included several one-week workshops for the development of educational training consultants who would in turn train others. Several sources of information were used, including document review, interviews, and questionnaires. Methodology, results of the study, and copies of instruments are presented.

Guba, E. G., & Lincoln, Y. S. Effective evaluation: Improving the usefulness of evaluation results through responsive and naturalistic approaches. San Francisco: Jossey-Bass, 1981.

A useful presentation of how naturalistic evaluation methods can result in practical and useful findings.

Handbook for review and validation of Teacher Corps products and practices. San Francisco: Far West

Laboratory for Educational Research and Development, 1981.

This handbook provides Teacher Corps project personnel with general guidelines for assessing educational products and practices. It focuses on assuring the quality of project-developed practices prior to dissemination. It includes a product rating form with useful development and evaluation guidelines for the developer of educational products.

Havelock, M. C., & Havelock, R. G. Project LINKER: Case study of the Merrimack Education Center. Washington, D. C.: National Institute for Education, 1974. (ERIC Document Reproduction Service No. ED 094 728)

This case study demonstrates the application of this approach to the evaluation of an agency linking local school districts to information and program resources. Information sources include interviews of center staff and clients.

Kinnick, Mary K. Summative evaluation: Promising practices diffusion project. Corvallis: Oregon State University, 1980. (ERIC Document Reproduction Service No. ED 193 497)

This evaluation of a state-wide diffusion system included both surveys and interviews as information sources, and addressed the impact on several groups of both products and activities of the project.

Klein, S. S. Toward consensus on minimum criteria for educational products. Paper presented at AERA annual meeting, San Francisco, April 1976. (ERIC Document Reproduction Service No. ED 147 318)

This paper explores the criteria that may be used in making decisions about educational products. Criteria discussed include desirability, practicality,

intrinsic quality, product development, effects on users, and spinoffs.

Lawson, T. E. Formative instructional product evaluation: Instruments and strategies. Englewood Cliffs, NJ: Educational Technology Publications, 1974.

This volume presents a compilation of evaluation strategies which include both validated and nonvalidated instruments. These procedures were developed to provide useful formative evaluation within the Sanders and Cunningham model, which is presented briefly. A number of usable instruments are included in a form suitable for reproduction.

Loucks, S. F., Newlove, B. W., & Hall, G. E. Measuring levels of use of the innovation: A manual for trainers, interviewers, and raters. Austin: Research and Development Center for Teacher Education, The University of Texas, 1976.

Levels of Use is a variable describing the behaviors exhibited by individuals as they develop from lack of knowledge of an innovation to highly sophisticated use of the practice. The dimension of use, described in eight levels, describes what individuals actually do with an innovation, from their initial lack of knowledge through familiarization with it and preparation for use, through the gradual development of skills necessary for use to become routine, and finally to various levels of refinement of the innovation. A focused interview procedure has been developed to measure Levels of Use and is described in this article. Interviewers use a branching format based on certain decision points and probe for additional evidence of Levels of Use. The 20-minute long interview appears to the interviewee to be a casual conversation about how the innovation is being used.

Provus, M. Discrepancy evaluation for educational program improvement and assessment. Berkeley, CA: McCutchan Publishing, 1971.

A presentation of an evaluation model particularly aimed at the evaluation of discrete developmental programs in school settings. Stages of the model include design, installation, process, product, and cost evaluation.

Reinhard, D. L., et al. Evaluation designs for the Improving Teaching Competencies Program dissemination strategies. Portland, OR: Northwest Regional Educational Laboratory, 1976. (ERIC Document Reproduction Service No. ED 128 432)

This report presents a comprehensive evaluation design for the dissemination of a teacher training program. The design is explained, and instruments and other information sources are provided.

Robinson, M. Planning for feedback. San Francisco: Far West Laboratory for Educational Research and Development, no date.

Planning for Feedback presents a succinct and useful list of steps for obtaining and using feedback in a workshop.

Tallmadge, G. K. The joint dissemination review panel IDEABOOK. Washington, D.C.: National Institute of Education, 1977. (ERIC Document Reproduction Service No. ED 148 329)

This volume indicates the types of evidence that are used by the JDRP to decide if programs are effective, and therefore disseminable as exemplary through the National Diffusion Network. This volume gives a clear, although somewhat limited, presentation of some of the concerns in convincingly demonstrating the effectiveness of child programs.

Yeager, J. L. Evaluation as an essential tool in the field testing and dissemination of educational products. SRIS Quarterly, 1968, 1, 20-22.

Development, field trial, and dissemination are presented as three stages that precede the general adoption of an educational innovation. The role of evaluation in this process is discussed in general terms.